Comhairle Contae County Council

Old Connaught
Draft Local Area Plan
2025
Appendix 1 -5

Appendix 1: Draft Strategic Flood Risk Assessment (SFRA)

Contents

1.0 Introduction

This Draft Strategic Flood Risk Assessment (SFRA) of the Draft Old Connaught (LAP) has been prepared and informed having regard to 'The Planning System and Flood Risk Management Guidelines for Planning Authorities' (2009), (DEHLG & OPW) and the SFRA undertaken at County level for the Dún Laoghaire-Rathdown County Development Plan 2022-2028 (CDP).

The Planning System and Flood Risk Management Guidelines state that Planning Authorities are required to introduce flood risk assessment as an integral and leading element of their Development Plan functions. It sets out that Development Plans and Local Area Plans must establish the flood risk assessment requirements for their functional area. The Guidelines further state that flood risk management should be integrated into spatial planning policies at all levels to enhance certainty and clarity in the overall planning process.

An SFRA is an area-wide assessment of the existing risks of flooding and the impact of those risks arising from proposed spatial planning decisions. A staged approach has been adopted in the preparation of this SFRA, as advocated under the Guidelines.

Stage 1: Identifies if the area is at risk of flooding and if so, the principal sources of flooding.

Stage 2: Flood Risk Assessment confirms sources of flooding that affect the Plan area and involve the preparation of a flood zone map, based on best available data. This assessment will also detail a flood management strategy for the Plan area, if necessary.

Stage 3: Where a detailed Flood Risk Assessment is required to assess flood risk areas in sufficient detail and to provide quantitative appraisal of potential flood risk to a proposed or existing development, a Stage 3 Flood Risk Assessment will be carried out.

The Guidelines require the planning system at national, regional and local levels to:

A: Avoid development in areas at risk of flooding, particularly flood plains, unless there are proven wider sustainability grounds that justify appropriate development and where the flood risk can be reduced or managed to an acceptable level without increasing flood risk elsewhere.

B: Adopt a sequential approach to flood risk management when assessing the location for new development based on avoidance, reduction and mitigation of flood risk, and incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals.

1.1 Flooding & Strategic Environmental Assessment (SEA)

The 'Planning System and Flood Risk Management Guidelines' (2009) set out best-practice in terms of integrating SFRA and SEA. In this regard, Section 3.10 of the Guidelines state that, "*The SEA Process provides a good practice framework for scoping and considering a range of planning and environmental issues, including flooding in the plan making process"* and that "*Flood risk assessments carried out in response to these Guidelines, should be integrated with the SEA process"*.

The Guidelines further state that, "*Where SEA and the environmental report is required, flood risk assessment should be undertaken as early as possible in the process so that the SEA is fully informed of the flood risks and impacts of the proposed zoning or development…".*

Accordingly, this SFRA for the Old Connaught LAP has been prepared at the very outset of the Plan-making process, as a working document to align with the initial scoping stage for the SEA. In this way, it is envisaged that the SFRA may be integrated into the parallel SEA Process.

1.2 Flood Risk Management – Development Plan Policy

Chapter 10 of the CDP, '*Environmental Infrastructure and Flood Risk',* relates to flood risk management and states that:

> *"10.7.2 Policy Objective EI22: Flood Risk Management*
> *It is a Policy Objective to support, in cooperation with the OPW, the implementation of the EU Flood Risk Directive (20010/60/EC) on the assessment and management of flood risks, the Flood Risk Regulations (SI No 122 of 2010), the Department of the Environment, Heritage and Local Government, and the Office of Public Works Guidelines on 'The Planning System and Flood Risk Management' (2009) and relevant outputs of the Eastern District Catchment and Flood Risk Assessment and Management Study (ECFRAMS Study). Implementation of the above shall be via the policies and objectives, and all measures to mitigate identified flood risk, including those recommended under part 3 (flood risk considerations) of the Justification Tests, in the Strategic Flood Risk Assessment set out in Appendix 15 of this Plan".*

The Council's approach to the implementation of the Guidelines further to Policy Objective EI22 are as follows:

- Through the policies and objectives set out in the CDP SFRA in accordance with the over-arching sequential approach of Avoid, Substitute, Justify, and Mitigate. As set out in Section 5.1 of the CDP SFRA all applications for development must be accompanied by an appropriately detailed Site Specific Flood Risk Assessment (SSFRA).
- Any other flood risk areas that may be identified during the period of the CDP or in relation to a planning application (refer to Section 6 the CDP SFRA).
- Support for mitigation measures as set out in the CDP SFRA.
- Where certain measures proposed to mitigate or manage the risk of flooding associated with new developments are likely to result in significant effects to the environment or European sites downstream, such measures will undergo environmental assessment and Habitats Directive Assessment, as appropriate.
- Flood Risk Management and Strategic Flood Risk Assessment shall be incorporated into the preparation of all statutory plans.
- Regard shall be had to any future flood hazard maps, flood risk maps and flood risk management plans prepared as part of the Eastern District Catchment Flood Risk Assessment and Management Study and future iterations of other similar studies of impacts of climate change.
- Where flood protection or alleviation works take place the Council will ensure that the natural and cultural heritage and rivers, streams and watercourses are protected and enhanced.
- Existing wetland Habitats within the County which serve as flood protection/management measures shall be managed and enhanced.
- The Council will also require that all proposed flood protection or alleviation works will be subject to Appropriate Assessment to ensure there are no likely significant effects on the integrity, defined by the structure and function, of any European Sites and that the requirements of Article 6 of the EU Habitats Directive are met[1].

In accordance with the Flood Risk Management Guidelines and CDP policy, a Strategic Flood Risk Assessment has been prepared for the Draft Old Connaught LAP.

1.3 Old Connaught Local Area Plan – Statutory Context

The policy context for the Draft Old Connaught LAP is informed by a myriad of plans and policies at national, regional, and local level. The Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019-2031 (RSES) implements the practical elements of the National Planning Framework at a regional level. Old Connaught is identified in the RSES for future growth as part of the westward

[1] Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be a) no alternative solution available, b) imperative reasons of overriding public interest for the project to proceed; and c) Adequate compensatory measures in place.

expansion of the 'Key Town' of Bray. The 'Key Town' of Bray comprises tier 3 in the settlement hierarchy for the Region.

The RSES also includes a Dublin Metropolitan Area Strategic Plan (MASP) which provides a 12 to 20 year strategic planning and investment framework for the Dublin Metropolitan Area. The MASP specifically identifies Old Connaught within the North-South Corridor (DART), as suitable for the development of a new residential community.

The Draft Old Connaught LAP was prepared in accordance with the policies and objectives contained within the dlr County Development Plan 2022-2028 (CDP), the overarching statutory framework for the development of the County. The Core Strategy is the defining vision for how the County is likely to grow and develop over the lifetime of the Development Plan and Old Connaught is identified on the Core Strategy Map as a 'New Residential Community'. The Core Strategy Table of the CDP identifies an estimated residential yield of c. 2,005 new homes at Old Connaught. Specific Local Objective 105 of the CDP states that it is an objective of the council, *"To prepare a Local Area Plan for Old Connaught"*.

The LAP lands extend in total to circa. 219 hectares. In the DLR County Development Plan 2022-2028, 68 hectares of the LAP area are zoned objective 'A1', *"To provide for new residential communities and Sustainable Neighbourhood Infrastructure in accordance with approved local area plans"*; 134 hectares are zoned objective 'GB', *"To protect and enhance the open nature of lands between urban areas"*; 12 hectares are zoned objective 'F', *"To preserve and provide for open space with ancillary active recreational amenities"* and 0.4 hectares are zoned 'SNI', *"To protect, improve and encourage the provision of sustainable neighbourhood infrastructure*". An area of 38 hectares is identified as a Strategic Land Reserve in the 'GB' zoning in the northern Old Connaught LAP area.

The Draft Old Connaught LAP was prepared in accordance with Sections 18-20 of the Planning and Development Act, 2000 (as amended). The parallel environmental assessments, namely, the Strategic Environmental Assessment (SEA), Appropriate Assessment (AA) and the Strategic Flood Risk Assessment (SFRA) were undertaken in tandem, as iterative processes, informing the preparation of the Draft LAP.

1.4 Plan Area

Old Connaught is located approx. 20 km south of Dublin City Centre, within the administrative County of Dún Laoghaire-Rathdown. In the immediate urban context, approx. 2km to the southeast of the Plan area is Bray Town, which has a population of approx. 33,500 persons (Census 2022), while approx. 3km to the northeast of the Plan area lies Shankill. The developing area of Fassaroe is location to the south of the LAP area within the administrative area of Wicklow County Council.

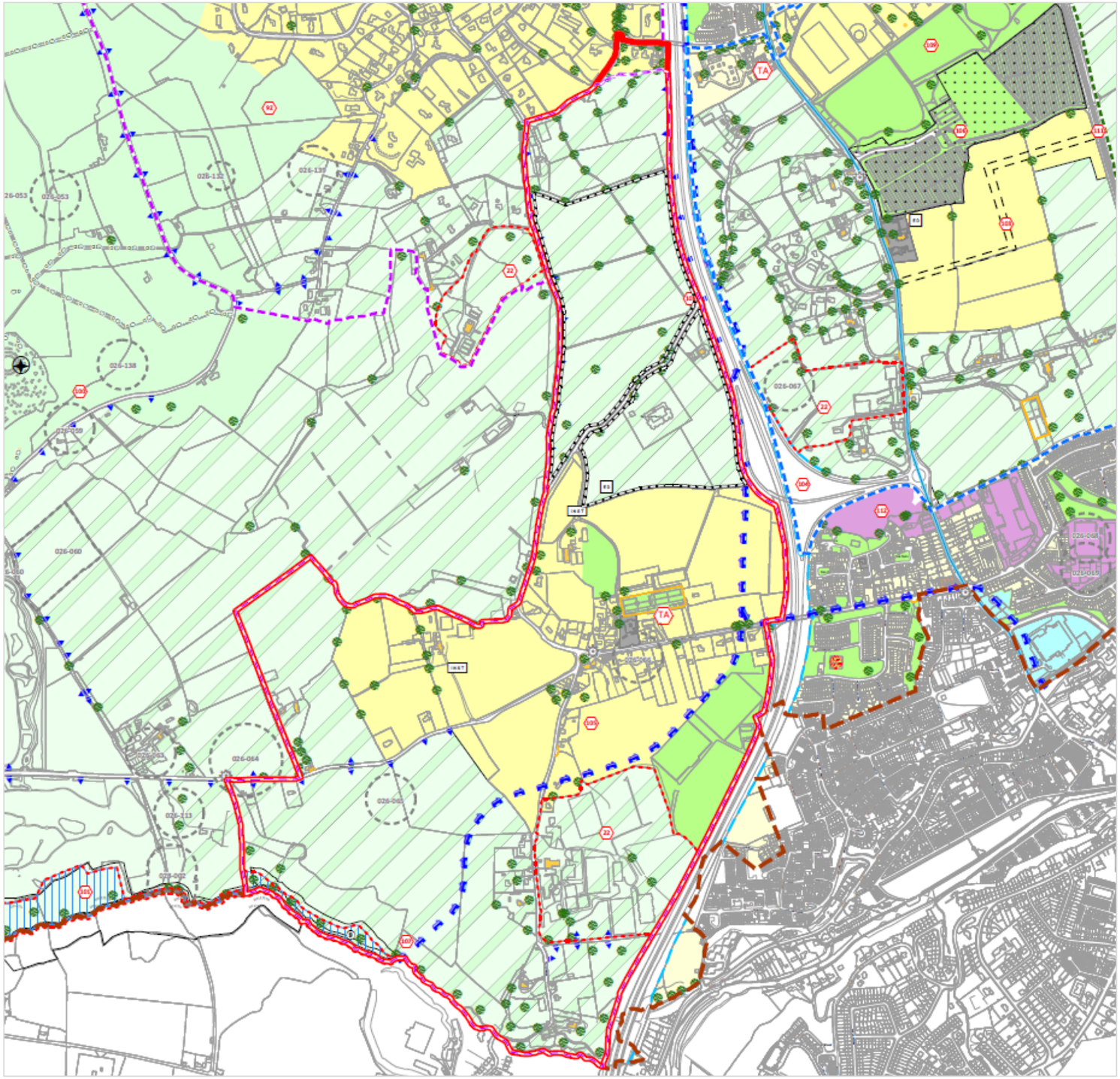


Figure 1: Draft Old Connaught LAP Plan Boundary

The Plan area is bounded to the east by the M11 motorway; to the west by Ferndale Road and 'GB' – Green Belt zoned lands which incorporate primarily agricultural, recreational, and educational land uses; to the north by a pedestrian public right-of-way connecting Crinken Lane and Ferndale Road and the adjoining boundary of the Rathmichael LAP; and to the south by the steep-sided County Brook river valley (Ballyman Glen).

The existing landscape within the Plan area has a distinctly rural feel with an open landscape and agricultural activities. The core of Old Connaught is contained along Old Connaught Avenue and its junction with Thornhill/Ballyman/Ferndale Roads. Ribbon residential development is the dominant built form along these main road corridors. The landscape is also punctuated with Protected Structures, which is reflective of the demesne history of the area.

The topography of the area slopes downwards from west to east, with steep levels along the Ballyman and Ferndale Roads. The lands closer in proximity to the M11 are relatively flat. The majority of the flat and gently sloping lands consist of undulating farmland, laid out in large pasture fields, and delineated by low hedges and trees.

1.5 Identification of Flood Risk

Introduction

This section examines the flood risk information available for the Draft Plan lands. The flood extents as shown in the dlr CDP which were based on CFRAMS maps are explored along with revised flood maps produced as part of a flood risk assessment carried out on the Old Connaught Tributary Catchment upstream of the M11 motorway. This assessment has changed the flood extents within the Plan area and a request for a Flood Map Review has been initiated with the OPW. The flood risk assessment of the Old Connaught tributary is included as Appendix 1B.

i. Strategic Flood Risk Assessment - County Development Plan 2022-2028

An SFRA was undertaken for the Dún Laoghaire-Rathdown CDP 2022-2028, the purpose of which was to provide sufficient information to allow proper planning decisions to be made on sites at risk of flooding over the lifetime of the Plan, and to ensure that the necessary information regarding flooding, the 'Sequential Approach' and the 'Justification Test', was available as part of the decision-making process of the CDP.

As recommended in 'The Planning System and Flood Risk Management Guidelines' (2009), the SFRA for the CDP 2022-2028 undertook a two-stage assessment of flood risk for the entire County area. The first stage identified flood risk and developed flood zone maps which confirmed that a proportion of zoned lands were at risk of flooding. The second stage, and the main purpose of the SFRA document, highlighted development areas that require more detailed assessment on a site-specific level. The SFRA also provides guidelines for development within areas at potential risk of flooding and specifically looks at flood risk and the potential for development across the County.

The SFRA for the CDP provides a background to flood risk in Dún Laoghaire-Rathdown, including a review of available flood risk information and a summary of sources of flooding. It also provides an overview of flood management policy which includes details of development which may be appropriate in certain areas and the expected content of Site-Specific Flood Risk Assessments (SSFRAs). The 'Justification Test' was applied across the County, with regard to the major growth areas as identified under the Core Strategy.

The SFRA for the CDP sets out the definition of 'Flood Zones' as per 'The Planning System and Flood Risk Management Guidelines' (2009), with reference to the high, moderate or low risk of flooding from fluvial or tidal sources, being based on an undefended scenario which does not take into account the presence of existing or proposed flood protection structures such as flood walls or embankments.

ii. Flood Zone Maps – SFRA of the DLR County Development Plan 2022-2028

Flood Zone Maps for the entire County were prepared as part of the SFRA for the dlr CDP 2022-2028, utilising the latest available data sources (see Table 3-1 of the dlr CDP SFRA 2022-2028). The Flood Zone Maps show Flood Zones A, B, and C and identify historical and predicted flooding hotspots in the County.

The SFRA undertaken for the dlr CDP 2022-2028 utilised several datasets relating to historical and predicted flood extents. The 'Identification of Flood Risk (Stage 1)', identified flood risk based on available data, including historical records and a range of data sources (see Table 3-1 of the DLR CDP SFRA 2022-2028). This range of data sources were compiled to produce flood zone maps that formed the basis of the SFRA for the CDP 2022-2028, which in turn guided CDP policy and informed the application of the 'Justification Test'.

It should be noted that the data was developed at a point in time and, as a result, there may be changes in the catchment that means a future study, or more localised assessment of risk, may result in a change in either flood extent or depth. In this regard a Site-Specific Flood Risk Assessment (SSFRA) may result in more locally accurate information which could show a greater or lesser level of risk than is included in the flood zone maps of the CDP.

It is noted that sections of the OPW ECFRAM flood maps are currently 'under review' including the Crinken Stream in the northern part of the LAP area and the Dargle River and Dargle Tributary to the south of the LAP area.

iii. Definition of Flood Zones

In the Flood Risk Management Guidelines, flood zones are used to indicate the likelihood of a flood occurring. These zones indicate a high, moderate or low risk of flooding from fluvial or tidal sources and are defined below in Table 1.

Flood Zone	Description
Zone A High Probability of Flooding	This zone defines areas with the highest risk of flooding from rivers (i.e. more than 1% probability or more than 1 in 100) and the coast (i.e. more than 0.5% probability or more than 1 in 200).
Zone B Moderate Probability of Flooding	This zone defines areas with a moderate risk of flooding from rivers (i.e. 0.1% to 1% probability or between 1 in 100 and 1 in 1000) and the coast (i.e. 0.1% to 0.5% probability or between 1 in 200 and 1 in 1000).
Zone C Low Probability of Flooding	This zone defines areas with a low risk of flooding from rivers and the coast (i.e. less than 0.1% probability or less than 1 in 1000).

Table 1: Definition of Flood Zones

1.6 Old Connaught LAP – Identification of Flood Risk

i. Watercourses

Watercourses in the Old Connaught LAP area are identified in Table 2 and illustrated in Figure 2. The LAP area lies within the catchment of the Crinken Stream, which runs along the northern boundary of the LAP, where it enters a culvert to pass under the M11/N11 road corridor.

The Crinken Stream has two main tributaries, of which the southern tributary flows through Old Connaught. This tributary, known as the Old Connaught Stream (also known as the Ballyman Tributary), rises from Carrickgollogan mountain and flows down to Old Connaught where it enters a culvert upon converging with Ferndale Road. From here, the Stream is in a series of culverts and open channels, diverted from its original route, and is piped via the Wilford Interchange to a point where it discharges to the Crinken Stream again on the eastern side of the M11, prior to entering a culvert at Corke Abbey.

A second Stream, the County Brook Stream (Dargle Tributary), flows along the southern boundary of the LAP area, which is bounded by the steep-sided valley of the Ballyman Glen.

Watercourse	Channel Type	Description
Crinken Stream	Open	The Crinken Stream runs across the northern border of the LAP area.
Old Connaught Tributary	Closed (Partially culverted)	The Old Connaught Tributary runs through the centre of the LAP area. A bifurcation running along Old Connaught Avenue has been constructed to ease flows along the original Stream. The bifurcation rejoins the Tributary just before the crossing of the M11.
Dargle River and Dargle Tributary	Open	The Dargle River and Dargle Tributary border the southern portion of the LAP area.

Table 2: Watercourses in the Old Connaught LAP Area

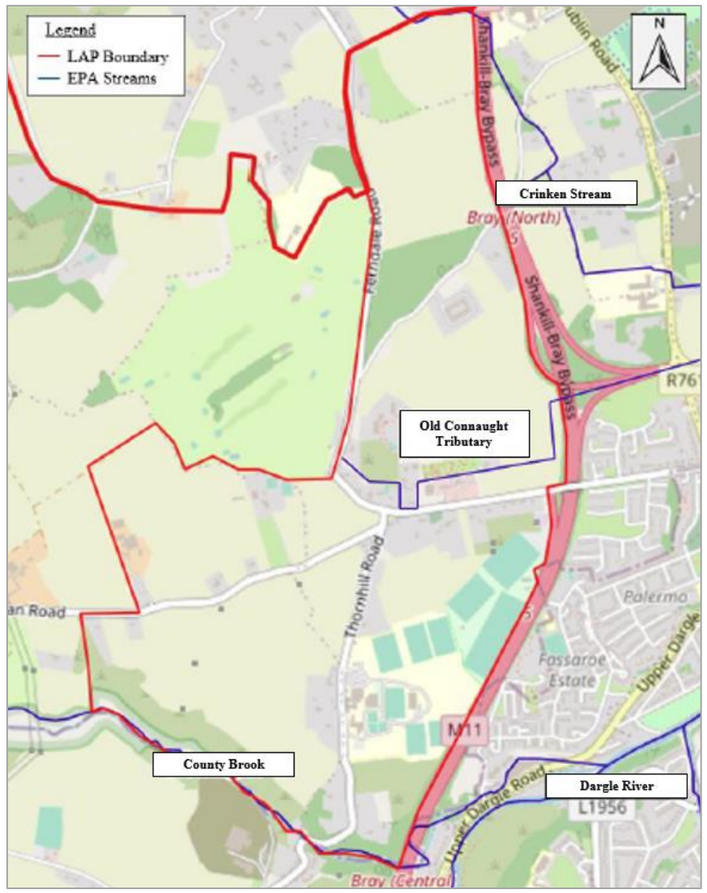


Figure 2: Watercourses in the Old Connaught Draft LAP Area

ii. Flood Zone Maps

Dún-Laoghaire Rathdown CDP 2022-2028 – SFRA

Flood Zone Maps were developed as part of the SFRA for the dlr CDP 2022-2028. The Old Connaught Draft LAP area is included in Flood Zone Map No. 14, see Figure 3. As illustrated in Figure 3, the Old Connaught Draft LAP area is primarily located within Flood Zone C (low probability), but with some areas located within Flood Zone A (high probability) and Flood Zone B (medium probability).

Within the Objective 'A1' zoned lands, a significant portion of the lands identified within Flood Zones A and B have largely been developed already, particularly along Old Connaught Avenue. There are further undeveloped lands in the surrounding area identified within Flood Zones A and B which are also zoned Objective 'A1'.

In addition, there are some lands identified as Flood Zone A and B, both in the south of the LAP area at the County Brook, and in the northeast of the LAP area at the Crinken Stream. These lands are primarily zoned Objective 'GB' – Greenbelt.

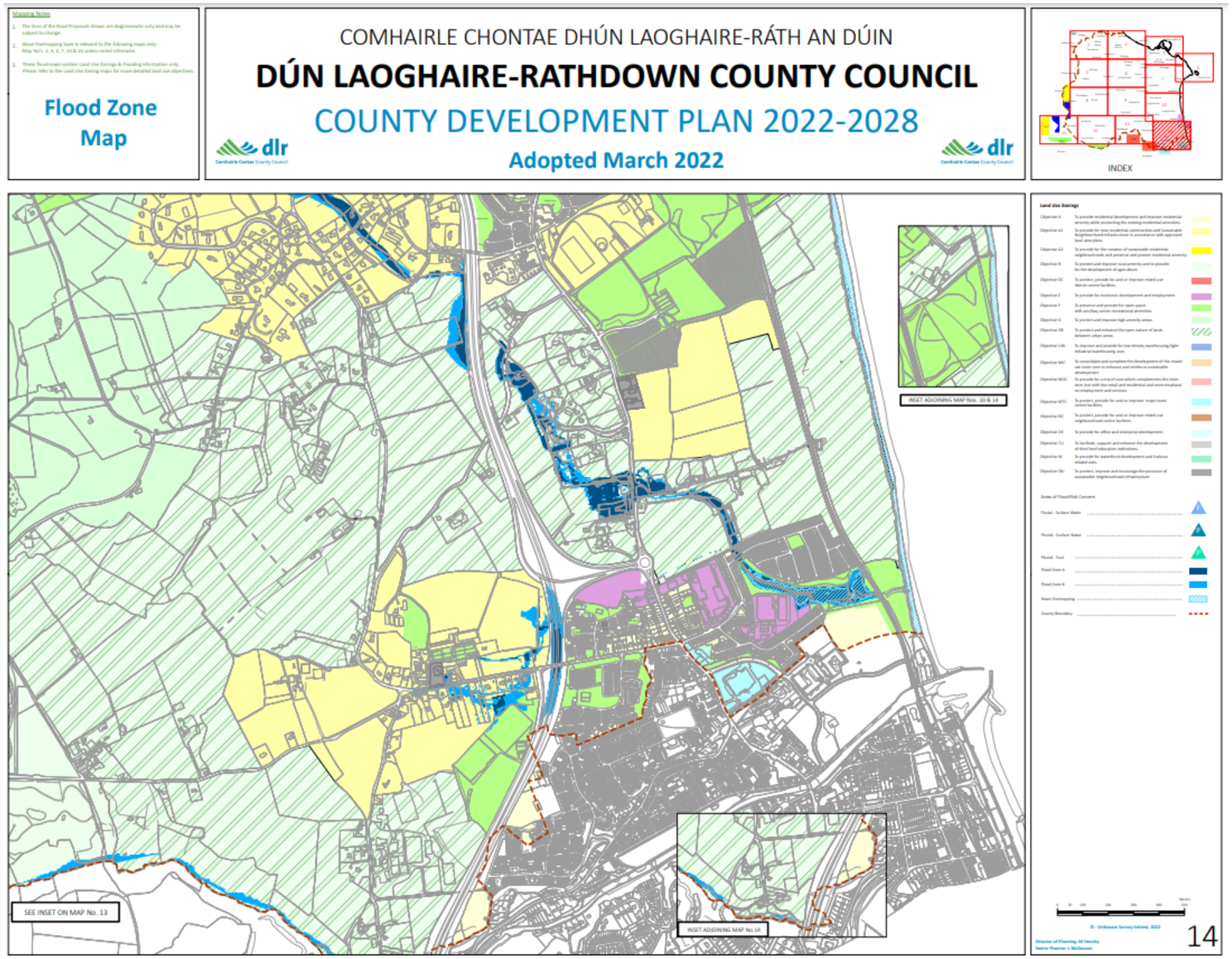


Figure 3: Flood Zone Map No. 14 - DLR CDP 2022-2028

Old Connaught Tributary Flood Risk Assessment 2024

In 2024 during the preparation of this Draft Local Area Plan, a Flood Risk Assessment (FRA) was carried out on the Old Connaught Tributary (included as Appendix 1B). The FRA reviewed the changes made to the network in 2015. The changes included the construction of a bifurcation manhole upstream of the area which floods in the 1% rainfall event. This manhole split the flow between the existing stream and a new surface water network of 900mm and 1200mm pipework, which runs along Old Connaught Avenue and discharges into the drainage ditch directly to the west of the M11 where it rejoins the Old Connaught Tributary. There are two outlets from the bifurcation manhole, a 900mm pipe which drains into the large diameter pipe network and a 300mm that drains into the stream. This removed a large volume of water from the open sections to the rear of properties on the northern side of Old Connaught Avenue. This has an impact on the flood patterns in the area which were not previously captured in CFRAMs models.

Revised flood maps have been produced as part of the Old Connaught Tributary Flood Risk Assessment. The FRA included desktop study, hydrological assessments, hydraulic model development and flood mapping. A number of key differences were identified in the CFRAM model and the revised hydraulic model including the upstream throttle pipe, culvert upsizing and inflow redistribution. This has resulted in significant differences in the flood extents around the Old Connaught Avenue area in both the 1% AEP and the 0.1% AEP. The revised Flood Map is shown in Figure 4.

As illustrated, the majority of the Old Connaught LAP area still lies within Flood Zone C (low probability) with a far lesser extent of Flood Zone A and Flood Zone B now predicted. It is proposed that the revised mapping is taken forward as the Flood Zone Maps for the area. The results of the Flood Risk Assessment have been presented to the OPW with a request for a Flood Map Review for the area.

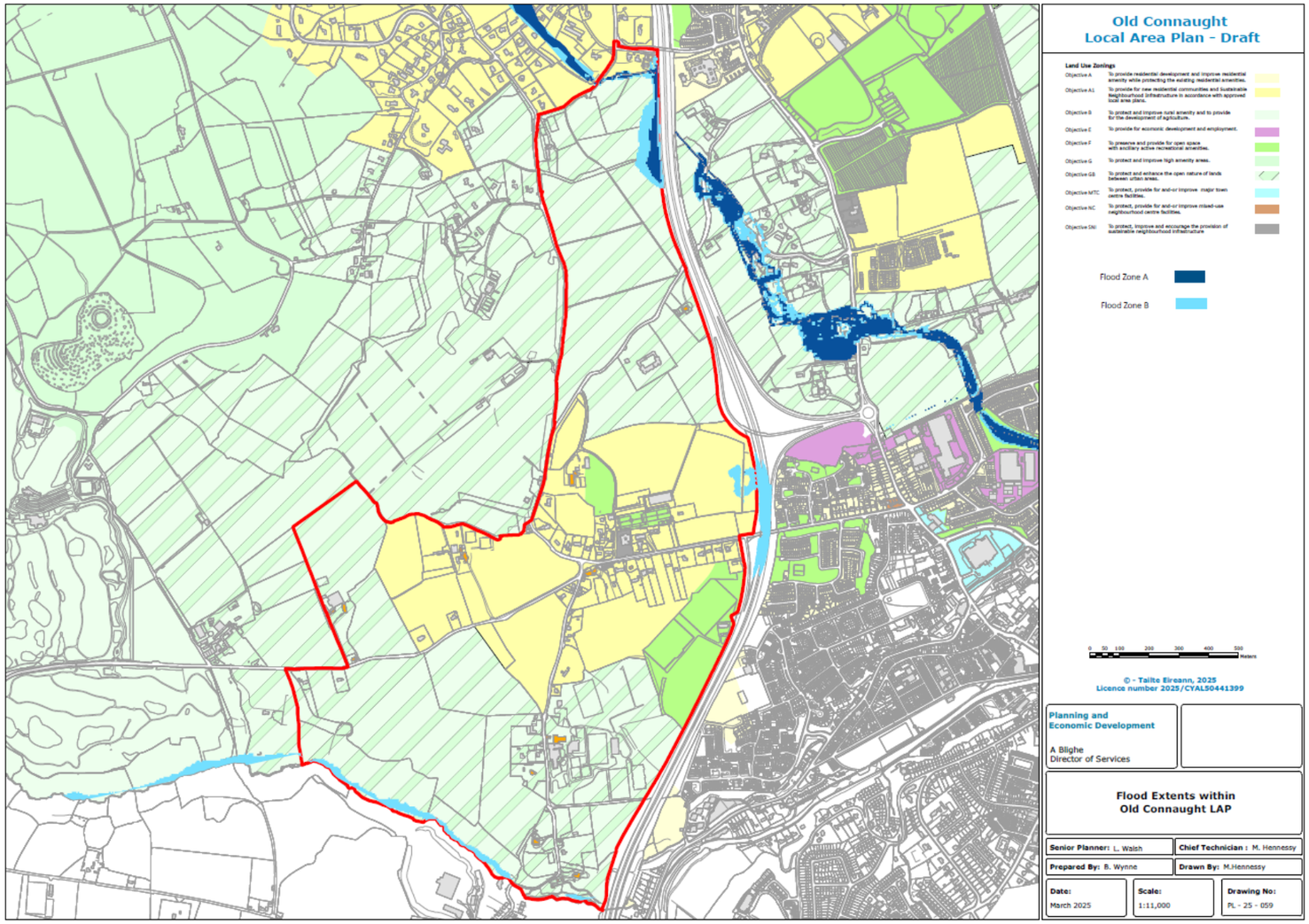


Figure 4: Revised Flood Maps for the Old Connaught LAP Area

iii. Historical Flooding Records

The OPW keeps records of historical flooding events and causes where known. Figure 5 and Table 3 detail the main historical flooding events relevant to the Old Connaught LAP area and environs, as recorded by the OPW. In relation to Flood Event 'ID-2030', the minutes of the meeting discussing the 2005 flood event at Old Connaught Avenue stated, *"Occasional flooding due to hydraulic inadequacy. Some properties may have been flooded"*. The same Minutes noted that many of the flooding problems in the Council area arose from blocked trash screens.

The most notable historical flooding occurred in 2010, affecting nine houses along Old Connaught Avenue. Historical flooding occurred primarily due to flows received from the lands around the Old Conna Golf Club directly to the west of Ferndale Road, which, on one recorded occasion increased substantially in the winter months when snow events were followed by rain, causing additional flows to enter the Old Connaught tributary and overwhelm the system.

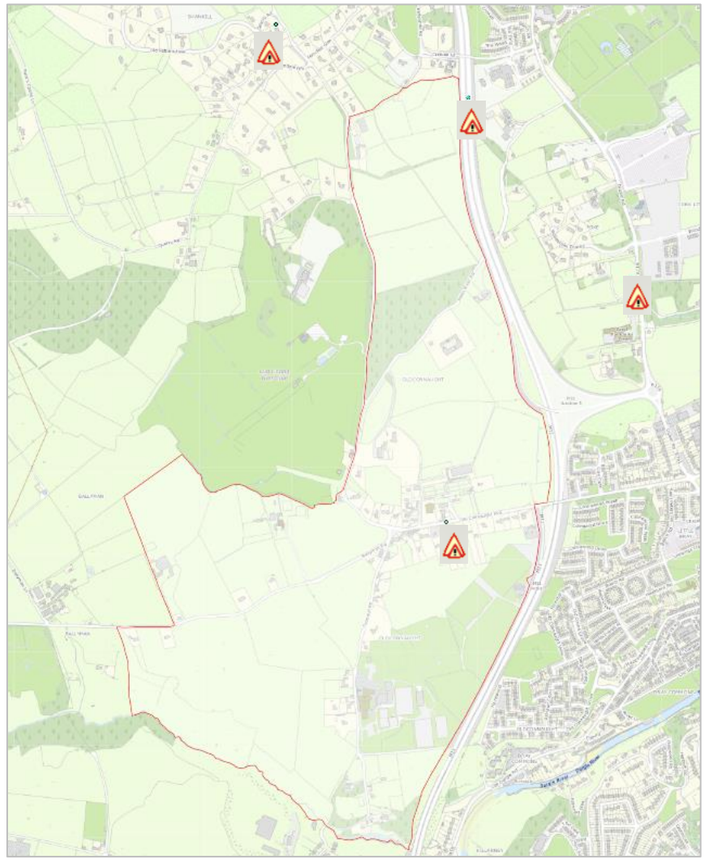


Figure 5: OPW – Past Flood Events (source: floodinfo.ie)

Flood ID	Areas impacted	Year	Record Type	Source
ID-2030	Old Connaught Avenue	2005	Recurring	Fluvial/Run-Off
ID-2066	Springmount Shankill	2005	Recurring	Fluvial
ID-2029	Ferndale Road	2005	Recurring	Fluvial
ID-2019	Crinken Woodbrook Stream	2001 / 2005	Recurring	Fluvial

Table 3: Historical Flood Events (source: floodinfo.ie)

iv. Groundwater Flood Risk

The GSI Groundwater Flooding Probability Maps were reviewed to assess the risk of groundwater flooding in the Old Connaught LAP area. The maps indicate that the Old Connaught LAP area is not impacted by the 10% AEP, 1% AEP and 0.1% AEP groundwater floods and therefore, flood risk from groundwater in the Old Connaught LAP area is low. However, monitoring of groundwater levels may be required to definitively assess the risk of groundwater flooding depending on site conditions.

v. Pluvial Flooding

Pluvial flooding is the result of rainfall-generated overland flows that arise before run-off can enter a watercourse/sewer or ground infiltration capacity has been exceeded. Flooding of land from surface water runoff is usually caused by intense rainfall that may only last a few hours. The resulting water follows natural valley lines, creating flow paths along roads and through and around developments with ponding in low spots, which often coincide with fluvial floodplains. Any areas at risk from fluvial flooding will almost certainly be at risk from surface water flooding.

Although having potentially severe consequences, pluvial flooding can generally be managed through site design, layout and drainage. Further details in relation to surface water flood risks are set out in Section 5.6 of the SFRA for the dlr County Development Plan 2022-2028.

vi. Coastal Flood Risk

The predicted flood extents for the 0.5% and 0.1% AEP coastal flood events from the ECFRAM coastal flood maps were reviewed. The Old Connaught LAP area is located outside of the coastal flood extents and is therefore not at risk of coastal flooding including for the mid-range and high-end future scenarios.

vii. Climate Change

The Flood Risk Management Guidelines (2009) recommend that a precautionary approach to climate change is adopted due to the level of uncertainty involved in the potential effects. Specific advice on the expected impacts of climate change and the allowances to be provided for future flood risk management in Ireland is given in the OPW draft guidance[2].

The OPW guidance recommends two climate change scenarios are considered: the Mid-Range Future Scenario (MRFS) and the High-End Future Scenario (HEFS). The MRFS and HEFS for Old Connaught, as prepared as part of the Old Connaught Tributary Flood Risk Assessment are illustrated in Figures 6 and 7. In all SSFRAs climate change will be a consideration.

Figure 6: Old Connaught Tributary - Mid-range Future Scenario and High-end Future Scenario in the 1%AEP Current Scenario

[2] OPW Assessment of Potential Future Scenarios, Flood Risk Management Draft Guidance, 2009

Figure 7: Old Connaught Tributary - Mid-range Future Scenario and High-end Future Scenario in the 0.1%AEP Current Scenario

viii. OPW - Flood Risk Management Plans

Following the completion of the OPW's ECFRAMS Programme, the Government approved funding for a series of Flood Risk Management Plans. The purpose of these Flood Risk Management Plans is to set out the strategy, including proposed measures, for the cost-effective and sustainable, long-term management of flood risk in River Basins, including the areas where flood risk has been determined as being potentially significant.

The Flood Risk Management Plan (FRMP) for the Avoca - Vartry River Basin (2018) was one of the 29 Plans published, and this Management Plan incorporates the Crinken Stream. Old Connaught / Wilford is identified in the FRMP as an Area for Further Assessment (AFA). The FRMP makes provision to progress the development of a Flood Relief Scheme for Old Connaught (which incorporates the Old Connaught Stream) through the identification of recommended flood risk management measures.

Appendix G of the FRMP provides a description of potentially viable flood relief works for Old Connaught and Wilford that may be implemented after project-level assessment and possible amendment. The preferred measure, a diversion of the flow of the Old Connaught Stream, is illustrated in Figure 8 below. No further details, including a timeline, are available at present concerning this proposed Flood Relief Scheme.

It is acknowledged in the FRMP for the Avoca - Vartry River Basin (2018) that the Old Connaught Stream Flood Relief Scheme, pre-dated the FRMP, and provided protection to properties in the LAP area. Ongoing maintenance of this Scheme was committed to in the FRMP.

The Old Connaught Stream Flood Relief Scheme was constructed in 2015 and comprised a culvert bifurcation to protect against the 1% AEP event for more than 10 properties adjacent to the Old Connaught Tributary along Old Connaught Avenue. The bifurcation included a 900 to 1200mm diameter pipe route which runs underneath Old Connaught Avenue and discharges into the drainage ditch directly to the west of the M11 where it rejoins the Old Connaught Tributary.

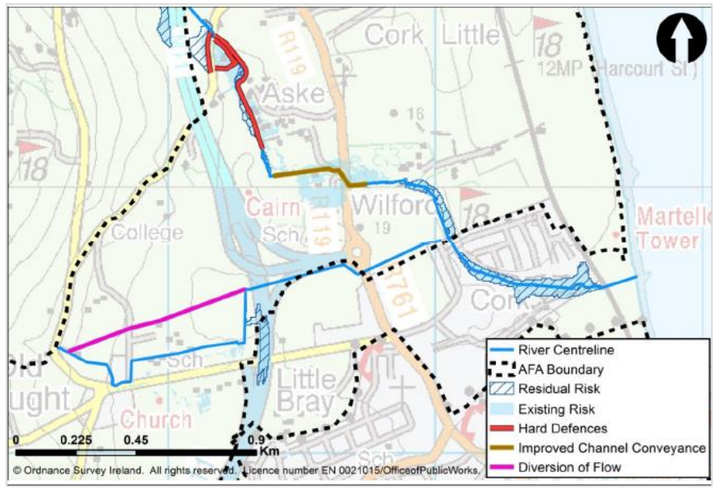


Figure 8: Old Connaught and Wilford Area of Further Assessment (Flood Risk Management Plan for the Avoca-Vartry Basin - Appendix G)

1.7 The Sequential Approach & Justification Test

As set out in Chapter 3 of 'The Planning System and Flood Risk Management Guidelines' (2009), the key principles of the risk-based Sequential Approach is managing flood risk in the preparation of plans, and these principles are adhered to in the Draft Old Connaught LAP.

This is the key tool in the decision-making process of preparing plans to ensure that development is first and foremost directed towards land that is at low risk of flooding. This approach makes use of existing Flood Risk Assessments and other data identifying flood zones for rivers, coastal and fluvial flooding and the classification of the vulnerability of flooding of different types of development. The sequential approach in terms of flooding is based on the following principles:

- The primary objective of the sequential approach is that development is primarily directed towards land that is at low risk of flooding (AVOID).
- The next stage is to ensure that the type of development proposed is not especially vulnerable to adverse impacts of flooding (SUBSTITUTION).
- The Justification Test is designed to rigorously assess the appropriateness, or otherwise, of particular developments that, for various reasons, are being considered in areas of moderate or high flood risk (JUSTIFICATION). The Justification Test comprises of two processes, namely, the Plan-Making Justification Test and the Development Management Justification Test.

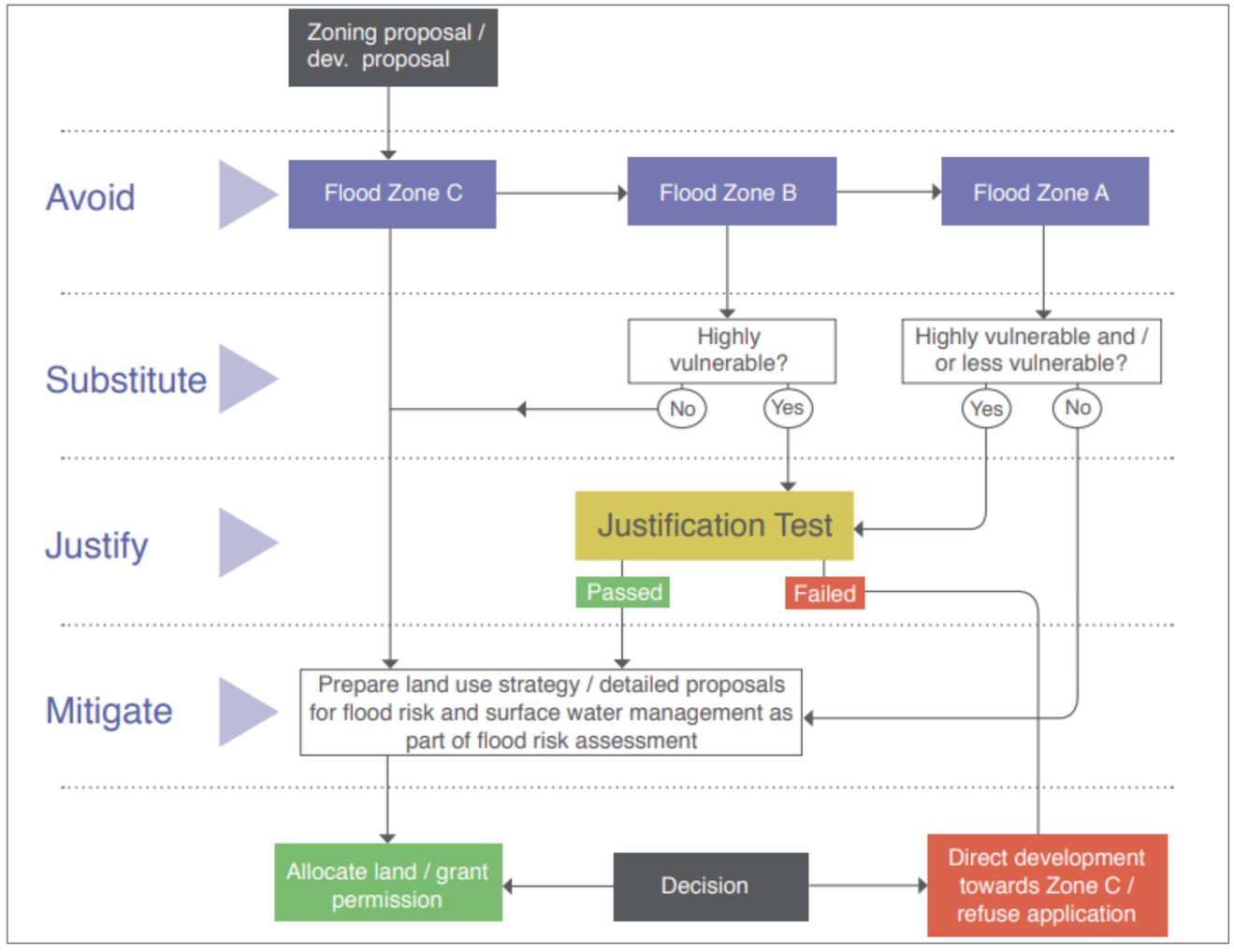


Figure 9: The Sequential Approach Mechanism in the Planning Process - The Planning System and Flood Risk Management Guidelines (2009)

ix. The Plan-Making Justification Test

As part of the SFRA for the dlr CDP 2022-2028, the Plan-Making Justification Test was applied to lands throughout the County, including lands at Old Connaught and lands within the catchment of the Crinken Stream.

The SFRA undertaken for the dlr CDP 2022-2028 indicated that there were existing, developed and zoned areas within the County that were at risk of flooding (Flood Zone A and Flood Zone B). Having reviewed the level of flood risk within the County through the preparation of Flood Zone maps, and determined appropriate measures for assessing and managing risks to high and low vulnerability development in Flood Zones A, B and C, a more detailed assessment of sites and areas was carried out through the Plan-Making Justification Test.

An overview of the CDP Plan-Making Justification, with specific reference to the Draft Old Connaught LAP area, is set out hereunder.

x. Plan-Making Justification Test – Old Connaught

The Flood Risk Management Guidelines (2009) outline the criteria for the 'Justification Test' for a Development Plan, and three criteria must be satisfied. The three criteria for the Justification Test for the Old Connaught area are outlined in Table 4, including responses under the SFRA for the dlr CDP 2022-2028 (see Section 6.2.7 Old Connaught (dlr CDP 2022-2028 Flood Zone Map 14)). It is noted that while the extent of flooding has changed, it is not proposed to change the Justification Test results for the area.

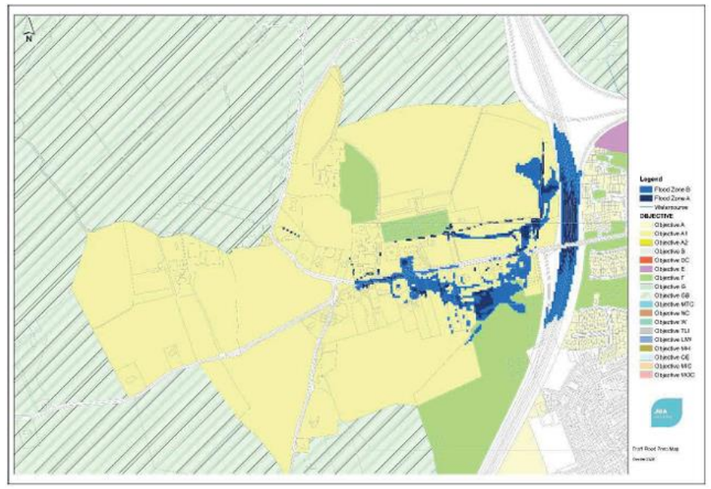


Figure 10: Extract from the Old Connaught Plan-Making Justification Test – dlr CDP SFRA 2022-2028 (Section 6.2.7)

Table 4: Plan Making Justification – Old Connaught LAP (Extract from Section 6.2.7 of the SFRA for the dlr CDP 2022-2028)

Justification Test Criteria		Response
1	The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, as amended.	The NPF states that Dublin needs to accommodate a greater proportion of the growth it generates within its metropolitan boundary Old Connaught is located within the Dublin Metropolitan area (see figure 1.3 of the County Development Plan). The RSES sets out a settlement hierarchy for the Region and Old Connaught is identified as a strategic residential development area for the westward expansion of the key town of Bray (Tier 3 in the RSES settlement hierarchy). The Dublin MASP identifies strategic residential and employment growth corridors for the Dublin Metropolitan area and identifies Old Connaught on the North-South Corridor (DART) as a suitable location for the development of a new residential community. The Core Strategy of the County Development Plan identifies Old Connaught as a 'New Residential Community' to be facilitated by way of identified planned infrastructure upgrades (see Appendix 1 of the County Development Plan.)
2	The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:	
2 (i)	Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement.	The RSES states that population growth in Bray has been modest compared to other settlements as expansion of the own is constrained by the coast to the east, Bray Head/Sugarloaf mountains to the south and the N/M11 to the west. In order for Bray to fulfil its growth potential, the RSES states that, "…lands at Fassaroe to the west of the N/ M11 are targeted for new housing, employment and major community and sports facilities, along with development of lands at Old Connaught (Conna) -Fassaroe, which are within Dun Laoghaire-Rathdown." The Dublin MASP, which comprises a component part of the RSES, specifically identifies Old Connaught as a strategic development area to support the westward expansion of Bray.
2 (ii)	Comprises significant previously developed and/or under-utilised lands.	The subject lands consist of significant underutilised zoned land suitable for higher density development which will be served by planned infrastructure upgrades (see Appendix 1 of the County Development Plan).
2 (iii)	Is within or adjoining the core of an established or designated urban settlement.	The lands at Old Connaught are located within the Dublin Metropolitan Area of the GDA and are contiguous to the Key Town of Bray. As noted in 2(i) above the RSES specifically identifies the Old Connaught lands as a strategic development area to support the westward expansion of Bray.
2 (iv)	Will be essential in achieving compact and sustainable urban growth.	The future development of the Old Connaught lands will be in accordance with an approved LAP prepared in accordance with up to date guidance on sustainable settlement and compact urban growth. In light of significant planned infrastructure upgrades in the Old Connaught area (see Appendix 1 of the County Development Plan) it is considered that the lands would comprise sustainable urban growth.
2 (v)	There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement. (Criteria can be set aside where section 4.27b of Circular PL2.2014 applies. This section would appear to relate to regeneration areas although the circular does not clearly identify Section 4.27b)	There are no suitable alternative lands identified within the County. Old Connaught is specifically identified in the RSES to support the westward expansion of the Key Town of Bray.
3	**Flood Risk Considerations** The indicative LAP boundary for Old Connaught (see SFRA Map no. 14) includes some lands within Flood Zones A and B. Within the 'A1' zoned lands, a significant portion of the lands identified within Flood Zones A and B have largely been developed already, particularly along Old Connaught Avenue. There are further lands in the surrounding area identified within Flood Zones A and B which are also zoned 'A1'. In addition, there are some lands identified as Flood Zone A and B both to the south of the LAP area at the County Brook and to the northeast of the area at the Crinken Stream. These lands are, however, zoned 'GB'. Flood risk in the main arises from overland flows as a result of under capacity of the water course upstream of the village. It is noted that a surface water pipe has been installed to mitigate flood risk in the village environs. Whilst providing benefits to existing development, it is important that residual risks, such as through culvert blockages should be addressed through LAP SFRA and policy objectives / site specific flood risk assessment. The CFRAM Study also indicates that climate change impacts on flood extents could be significant. It is important that the LAP SFRA also reviews the likely impacts of climate change, and where appropriate, incorporates measures for management of such risks, both in the plan making stage and by adopting the design recommendations contained in this County Development Plan SFRA. Proposed development in and adjacent to Flood zone A and B will have to include for the management of flooding on site, and within the scope of the sites specific FRA. Use of the sequential approach should be presented in a masterplan which should demonstrate that there is no highly vulnerable development within Flood Zones A or B. There should be no loss of floodplain storage for the 1% AEP event and the impact of any changes to ground levels and storage areas as part of flood management proposals should be assessed for the 1% AEP flood. As overland flow is the primary source of flood risk it is important that on conveyance routes through the site are maintained. The SSFRA will also need to demonstrate there is no impact in flood risk to third party lands.	
Conclusion	Justification Test passed for Old Connaught	

xi. Plan-Making Justification Test – Crinken Stream

Part 3 of the Plan-Making Justification Test was applied to lands throughout the County including lands within the catchment of the Crinken Stream. The Old Connaught LAP area lies within the catchment of the Crinken Stream, which runs along the northern boundary of the LAP area, where it enters a culvert to pass under the M11/N11 corridor.

The Plan-Making Justification Test undertaken for the CDP SFRA includes an overview of the flood risks and implications for development associated with the Crinken Stream (see Section 6.2.8 of the SFRA for the dlr CDP 2022-2028) and states, inter alia, the following:

"At the downstream end of the Crinken Stream there is flooding to an area zoned for Economic Development and Employment (1b) which is currently carparking. Although the zoning has been retained, redevelopment of this land for less or highly vulnerable development does not pass the Plan Making Justification Test and only water compatible uses will be permitted with Flood Zone A and B. There is also flooding to the open space area associated with Woodbrook Glen residential development (1) Figure 6-1. Flooding is also predicted the east of M50 either side of Allies River Road (2). Flood risk arising from the Crinken Stream in this area is primarily within land zoned as greenbelt (GB and F). Flooding is also shown at St Brendan's School, Wilford and lands to north at Woodbrook Downs and Woodbrook Golf course and to west of M50 south of Crinken Lane (3); this land is also zoned as greenbelt. These zonings are water compatible and therefore appropriate within Flood Zone A and B and should be retained.

Although some minor development associated with the existing uses, including the school, may be permitted under Section 5.28 of the Planning Guidelines, it is important to ensure that there will be no significant additional number of people introduced into flood risk areas, amongst the other requirements of Section 5.28."

(Emphasis Added)

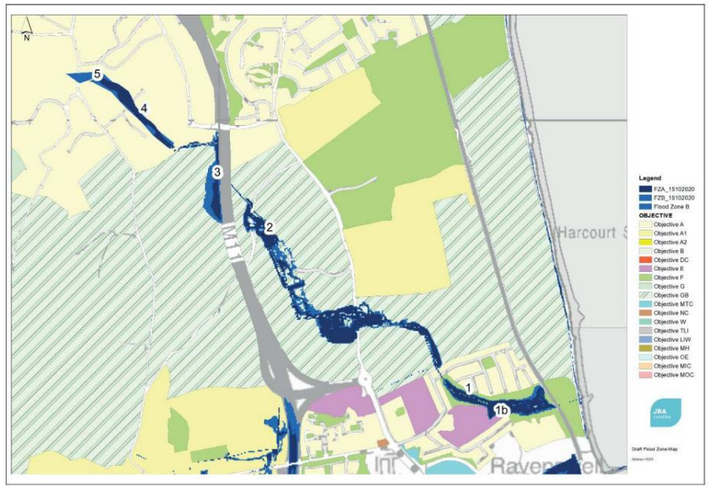


Figure 41: Crinken Stream (Extract from the DLR CDP SFRA 2022-2028, Figure 6.1)

1.9 Flood Risk Management – Policy Response

This Section of the SFRA sets out the policy response for the management of flood risk within the Old Connaught LAP area. This Section should be read in conjunction with the overarching guidance set out in the SFRA for the dlr CDP 2022-2028 and that contained in 'The Planning System and Flood Risk Management Guidelines' (2009).

i. Requirements for a Flood Risk Assessment – An Overview

The Planning Authority acknowledges that an SSFRA may result in more locally accurate information which could show a greater or lesser level of risk than is included in the existing extents of Flood Zones A and B.

Policy OCLAP60 – Flood Risk Assessment:

It is Policy to manage flood risk in the Old Connaught LAP area in accordance with the requirements of The Planning System and Flood Risk Management Guidelines for Planning Authorities, DECLG and OPW (2009) and Circular PL02/2014 (August 2014) and to require all proposed developments to carry out a Site-Specific Flood Risk Assessment that shall demonstrate compliance with:

- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (DEHLG/OPW, 2009), as may be revised and/or updated.
- The prevailing Dún Laoghaire-Rathdown County Development Plan.
- Any SSFRA shall not be required to carry out a Plan-Making Justification Test, given that this exercise was already carried out at County Development Plan-level.
- The SSFRA shall pay particular emphasis to site specific mitigation measures and any necessary management measures, as per Appendix B4 of the above 2009 National Guidelines.

Policy OCLAP61: Flood Risk Considerations

It is Policy that proposed development in and adjacent to Flood Zone A and B will include for the management of flooding on site, and within the scope of the SSFRA. Use of the sequential approach should be presented in a Masterplan which should demonstrate that there is no highly vulnerable development within Flood Zones A or B. There should be no loss of floodplain storage for the 1% AEP event and the impact of any changes to ground levels and storage areas as part of flood management proposals should be assessed for the 0.1% AEP flood. As overland flow is the primary source of flood risk, it is important that conveyance routes through the site are maintained. The SSFRA will also need to demonstrate there is no impact in flood risk to third party lands.

ii. Site Development Frameworks

The 'A1' zoned lands at Old Connaught have been deemed to pass the Development Plan Plan-Making Justification Test, as set out in Section 6.2.7 of the SFRA of the dlr CDP 2022-2028 (see Table 4 above). It is a policy to implement the recommendations of the Plan Making Justification Test through the development management process.

iii. Minor Development in Flood Zones A or B

In accordance with the SFRA of the dlr CDP 2022-2028, the following will apply to minor developments in Flood Zones A or B.

Applications for minor development, such as small extensions to houses or the rebuilding of houses, and most changes of use[3] of existing buildings and or extensions and additions to existing commercial and industrial enterprises, are unlikely to raise significant flooding issues, unless they obstruct important flow paths, introduce a significant additional number of people into flood risk areas or entail the storage of hazardous substances.

Since such applications concern existing buildings, the sequential approach cannot be used to locate them in lower-risk areas and the Justification Test will not apply. However, a commensurate assessment of the risks of flooding should accompany such applications to demonstrate that they would not have adverse impacts or impede access to a watercourse, floodplain or flood protection and management facilities. These proposals should follow best practice in the management of health and safety for users and residents of the proposal.

[3] changes of use that do not increase the level of vulnerability of the development

Infill development of any scale is not, as part of this SFRA, considered minor development and should be assessed under Sections 1.9(iv) and (v).

iv. Highly Vulnerable Development in Flood Zones A or B (other than Minor Development)

The classification of highly vulnerable development is defined in the Flood Risk Management Guidelines (2009) and includes (but is not limited to) dwelling houses, hospitals, emergency services, residential institutions and schools (see Table 3.1 of the Guidelines for further information).

As set out in the Plan-Making Justification Test for Old Connaught undertaken as part of the SFRA for the DLR CDP 2022-2028, see Table 4 above, it is not appropriate for new, highly vulnerable, development in Old Connaught to be located in Flood Zones A or B. Instead, a less vulnerable or water compatible use should be considered.

v. Less Vulnerable Development in Flood Zones A or B (other than Minor Development)

The classification of less vulnerable development is defined in the Flood Risk Management Guidelines (2009) and includes (but is not limited to) retail, leisure and commercial (see Table 3.1 of the Guidelines for further information). This category includes less vulnerable development in all forms, including refurbishment or infill development, and new development both in defended and undefended situations.

In accordance with the provisions of the SFRA of the dlr CDP 2022-2028, the design and assessment of less vulnerable development should begin with 1% AEP fluvial or 0.5% AEP tidal events as standard, with climate change and a suitable freeboard included in the setting of finished floor levels.

The presence or absence of flood defences informs the level of flood mitigation recommended for less vulnerable developments in areas at risk of flooding. In contrast with highly vulnerable development, there is greater scope for the developer of less vulnerable uses to accept flood risks while still building to a standard of protection which is high enough to manage risks for the development in question. However, any deviation from the design standard of 1%/0.5% AEP, plus climate change (see Table 5-1 of the dlr CDP SFRA: Climate change allowances by vulnerability and flood source for further information), plus freeboard, needs to be fully justified within the FRA.

vi. Development in Flood Zone C

In accordance with the SFRA of the dlr CDP 2022-2028, the following will apply to development in Flood Zone C.

Where a site is within Flood Zone C but adjoining or in close proximity of a watercourse, there could be a risk of flooding associated with factors such as future scenarios (climate change) or in the event of failure of a defence, blocking of a bridge or culvert. Risk from sources other than fluvial and coastal must also be addressed for all development in Flood Zone C.

As a minimum in such a scenario, a flood risk assessment should be undertaken which will screen out possible indirect sources of flood risk and where they cannot be screened out it should present mitigation measures. The most likely mitigation measure will involve setting finished floor levels to a height that is above the 1% AEP fluvial event or 0.5% AEP tidal flood event level, with an allowance for climate change and freeboard, or to ensure a step up from road level to prevent surface water ingress. Design elements such as channel maintenance or trash screens may also be required. Evacuation routes in the event of inundation of surrounding land should also be detailed.

vii. Climate Change

Climate change poses potential significant impact on flood levels and consideration of future climate change is essential for site planning and consideration of residual flood risk. Areas of residual risk are especially sensitive to climate change impacts and increasing flood levels may pose additional risks of defence failure.

Climate change scenarios, as produced in the Old Connaught Tributary Flood Risk Assessment, for the Mid-Range Future Scenario (MRFS) and the High-End Future Scenario (HEFS) - are illustrated in Figures 6 and 7 above. As stated in the Plan-Making Justification Test for Old Connaught, undertaken as part of the SFRA for the dlr CDP 2022-2028, the CFRAM Study indicates that climate change impacts on flood extents in Old Connaught could be significant. Climate change will be a consideration as part of all SSFRAs.

Development within the Old Connaught LAP area must consider climate change impacts. As per the SFRA for the dlr CDP 2022-2028, climate change allowances should be considered in accordance with development vulnerability, as stated in Table 4 (Table 5-1 of the SFRA for the dlr CDP 2022-2028). Furthermore, new development should incorporate measures for the management of potential flood risks associated with climate change through the adoption of the design recommendations contained in the SFRA for the dlr CDP 2022-2028.

Development Vulnerability	Fluvial climate change allowance (increase in flows)	Tidal climate change allowance (increase in sea level)	Storm water / surface water
Less vulnerable 20% 0.5m (MRFS)	Less vulnerable 20% 0.5m (MRFS)	Less vulnerable 20% 0.5m (MRFS)	Refer to the Stormwater Management Policy in Appendix 7.1 for details of climate change allowances
Highly vulnerable 20% 1.0m (HEFS)	Highly vulnerable 20% 1.0m (HEFS)	Highly vulnerable 20% 1.0m (HEFS)	
Critical or extremely vulnerable (e.g. hospitals, major sub-stations, blue light services)	30% 1.2m (and test up to 2m)9	30% 1.2m (and test up to 2m)[4]	
Note: there will be no discounting of climate change allowances for shorter lifespan developments.			

Table 5: Climate change allowances by vulnerability and flood source (Table 5-1, dlr CDP SFRA 2022-2028)

viii. Surface Water Management

New development has the potential to significantly increase the amount of surface water runoff from a site compared to the equivalent greenfield area due to the increase in impermeable surfaces. This can result in an increased flood risk to the local drainage network and water courses, as well as negatively impacting on water quality and biodiversity.

In order to effectively manage and mitigate the potential flood and pollution risks from increased surface water runoff, it is important to implement Sustainable Drainage Systems (SuDS) as part of the surface water management system for a development.

Sustainable Drainage Systems (SuDS) is defined by the Construction Industry Research and Information Association (CIRIA) as, *"…a sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques".*

Using SuDS techniques, water is either infiltrated or conveyed more slowly to water courses via ponds, swales, infiltration systems, bioretention areas, attenuation tanks or other installations to try and closely mimic natural catchment drainage behaviour. In addition to delaying the rate of runoff, SuDS features increase water quality by ensuring that pollutants filter down through soils or are broken down by bacteria. By mimicking the natural situation, SuDS attenuates and treats surface water runoff and improves environmental performance. This is an important element of climate change mitigation and resilience.

Appropriately designed, constructed and maintained SuDS features can mitigate many of the adverse effects of urban surface water runoff on the environment, thus future proofing communities against adverse weather effects. SuDS main objectives are therefore, to minimise the impacts from development on the quantity and quality of the runoff and maximise amenity and biodiversity opportunities.

The preferred Drainage Strategy for the Draft Old Connaught LAP area is to develop a new gravity stormwater network to facilitate new development. Due to the largely undeveloped nature of the Old Connaught LAP area, there is significant opportunity for large scale, catchment wide SuDS features / attenuation ponds. Regional SuDS features are to be provided to attenuate runoff from the catchment and to provide treatment to stormwater runoff.

New developments within the LAP area should maximise the provision of SuDS features and must be self-attenuated. In general, private developments should look to implement a surface water management strategy that provides a multi-level treatment train and which mimics natural processes to infiltrate and reuse surface water runoff, within the site curtilage, as much as possible. This should include a combination of SuDS features such as green/blue roofs, rainwater harvesting, rain gardens, rain planters, bio-retention areas, tree pits, swales, filters drains, permeable paving etc.

All surface water management designs should ensure they are in accordance with the requirements of the dlr County Development Plan 2022-2028, Section 10.2.2.6 Policy Objective EI6: Sustainable Drainage Systems, such that the proposal must demonstrate the requirements of the Greater Dublin Strategic Drainage Study (GDSDS) policies in relation to Sustainable Drainage Systems (SuDS), and also Appendix 7: Sustainable Drainage System Measures.

Policy OCLAP57: Sustainable Urban Drainage Systems

- To promote the use and appropriate maintenance of Sustainable Urban Drainage Systems (SuDS) to manage surface and groundwater regimes sustainably. These should be applied to all developments, including new road and public spaces, in line with Appendix 7 (7.1 and 7.2) of the dlr County Development Plan 2022-2028, to suit individual site layouts and local ground conditions.

- Design and maintenance of SuDS Systems should be in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) and the CIRIA SUDS Manual. The proposed networks should be designed in accordance with Appendix 7 (7.1 and 7.2) of the dlr County Development Plan 2022-2028, CIRIA C753 'The SuDS Manual' and the Greater Dublin Strategic Drainage Systems (GDSDS).

- Regional ponds shall be provided at a number of locations as identified in the LAP, providing storage to meet attenuation requirements for the 1% AED. Ponds will provide the final stage of treatment for water runoff prior to discharge to the public network/stream outside of the Old Connaught LAP area. The ponds may provide amenity and biodiversity benefits in accordance with best design practice.

- To pilot and test new green infrastructure installations in the public realm to boost biodiversity and improve surface water management, including the use of permeable materials for surfaces, green roofs and the provision of storm water tree trenches / pit.

- To support the development of soft landscaping in public open spaces and parks, where feasible in accordance with the principles of Sustainable Drainage Systems (SuDS).

[4] From OPW Sectoral Climate Change Adaptation Plan (2019) where a 2m rise in sea level is plausible under certain scenarios.

1.10 Conclusion

It is the strategy of dlr County Council, in accordance with the 'Planning System and Flood Risk Management Guidelines' (2009), to reduce the potential risk to people, property and the environment, caused by flooding, through a hierarchy of avoidance, followed by substitution of lower vulnerability uses and, only if avoidance and substitution are not possible, reduction and management of the risks through a variety of techniques.

The Draft SFRA for the Draft Old Connaught LAP sets out the policy response relating to the management of flood risk within the Plan area for both developed and undeveloped lands in areas at risk of flooding. This policy response should be read in conjunction with the SFRA for the dlr County Development Plan 2022-2028.

1.11 Disclaimer

It is important to note that compliance with the requirements of the Planning System and Flood Risk Management Guidelines (2009) and the Floods Directive 2007 60/EC is a work in progress. This guide for Flood Risk Assessment is based on best available information and may require revision as new information becomes available.

Accordingly, all information in relation to flood risk is provided for general policy guidance only. It may be altered in light of future data and analysis. As a result, all landowners and developers are advised that Dún Laoghaire-Rathdown County Council accepts no responsibility for losses or damages arising due to the vulnerability to flooding of lands, uses and developments. It remains the principal responsibility of owners, users and developers to take all reasonable measures to assess the vulnerability to flooding of lands in which they have an interest prior to making planning or development decisions. The indicative flood zone map (see Figure 4) for the Old Connaught LAP area does not show indicative flood hazard associated with any of the following:

- Extreme fluvial dominated combinations with pluvial flows
- Extreme pluvial events
- Blocked drains
- High ground water level conditions
- Other unforeseen events, e.g. bridge /culvert collapse etc.

Dún Laoghaire-Rathdown County Council makes no representations, warranties or undertakings about any of the information provided in this SFRA for the forthcoming Old Connaught LAP, including without limitation, on its accuracy, completeness, quality or fitness for any particular purpose. To the fullest extent permitted by applicable law, neither Dún Laoghaire-Rathdown County Council nor any of its members, officers, associates, consultants, employees, affiliates, servants, agents or other representatives shall be liable for loss or damage, arising out of or in connection with, the use of, or the inability to use, the information provided in this plan, including but not limited to, indirect or consequential loss or damages, loss of data, income, profit, or opportunity, loss or, or damage to, property and claims of third parties, even if Dún Laoghaire-Rathdown County Council has been advised of the possibility of such losses or damages, or such losses or damages were reasonably feasible. Dún Laoghaire-Rathdown County Council reserves the right to change the content and / or presentation of any of the information provided in this report at its sole discretion, including these notes and disclaimer. This disclaimer shall be governed by, and construed in accordance with, the laws of the Republic of Ireland. If any provision of this disclaimer shall be unlawful, void or for any reasons unenforceable, that provision shall be deemed severable and shall not affect the validity and enforceability of the remaining provisions.

Appendix 1A: Glossary of Terms

Annual Exceedance Probability (AEP) - Likelihood or probability of flooding or a particular flood event is classified by its annual exceedance probability (AEP) or return period (in years). A 1% AEP flood indicates the flood event that will occur or be exceeded on average once every 100 years and has a 1 in 100 chance of occurring in any given year.

Catchment - The area that is drained by a river or artificial drainage system.

Eastern Catchment Flood Risk Assessment and Management Studies (ECFRAMS) - A catchment-based study involving an assessment of the risk of flooding in a catchment and the development of a strategy for managing that risk in order to reduce adverse effects on people, property and the environment. CFRAMS precede the preparation of Flood Risk Management Plans.

Flood Risk - An expression of the combination of the flood probability or likelihood and the magnitude of the potential consequences of the flood event. Flood Risk Assessment (FRA) can be undertaken at any scale from the National down to the individual site and comprises three stages: flood risk identification, initial flood risk assessment and detailed flood risk assessment.

Flooding (or inundation) – Flooding is the overflowing of water onto land that is normally dry. It may be caused by overtopping or breach of banks or defences, inadequate or slow drainage of rainfall, underlying groundwater levels or blocked drains and sewers. It presents a risk only when people, human assets and ecosystems are present in the areas that flood.

Flood Defence – A man-made structure (e.g. embankment, bund, sluice gate, reservoir or barrier) designed to prevent flooding of areas adjacent to the defence.

Flood Risk Assessment (FRA) - An examination of the risks from all sources of flooding of the risks to and potentially arising from development on a specific site, including an examination of the effectiveness and impacts of any control or mitigation measures to be incorporated in that development.

Flood Zones - A geographic area for which the probability of flooding from rivers, estuaries or the sea is within a particular range as defined within these Guidelines.

Fluvial Flooding - Flooding from a river or other watercourse.

Groundwater Flooding – Flooding caused by groundwater escaping from the ground when the water table rises to or above ground level.

Initial Flood Risk Assessment - A qualitative or semi-quantitative study to confirm sources of flooding that may affect a Plan area or proposed development site, to appraise the adequacy of existing information, to provide a qualitative appraisal of the risk of flooding to development, including the scope of possible mitigation measures, and the potential impact of development on flooding elsewhere, and to determine the need for further detailed assessment.

'Justification Test' - An assessment of whether a development proposal within an area at risk of flooding meets specific criteria for proper planning and sustainable development and demonstrates that it will not be subject to unacceptable risk nor increase flood risk elsewhere. The 'Justification Test' should be applied only where development is within flood risk areas that would be defined as inappropriate under the screening test of the sequential risk based approach adopted by this guidance.

Likelihood (probability of flooding) – A general concept relating to the chance of an event occurring. Likelihood is generally expressed as a probability or frequency of a flood of a given magnitude or severity occurring or being exceeded in any given year. It is based on the average frequency estimated, measured or extrapolated from records over a large number of years and is usually expressed as the chance of a particular flood level.

Mitigation Measures - Elements of a development design which may be used to manage flood risk to a development, either by reducing the incidence of flooding both to the development and as a result of it and/or by making the development more resistant and/or resilient to the effects of flooding.

Precautionary Approach - The approach to be used in the assessment of flood risk which requires that lack of full scientific certainty, shall not be used to assume flood hazard or risk does not exist, or as a reason for postponing cost-effective measures to avoid or manage flood risk. River Basin Management Plan (RBMP) is required by the EU Water Framework Directive (2000/60/EC). These plans will establish a strategic plan for the long-term management of the River Basin District, set out objectives for water bodies and in broad terms, identify what measures are planned to meet these objectives, and act as the main reporting mechanism to the European Commission.

Pluvial Flooding - Usually associated with convective summer thunderstorms or high intensity rainfall cells within longer duration events, pluvial flooding is a result of rainfall-generated overland flows which arise before run-off enters any watercourse or sewer. The intensity of rainfall can be such that the run-off totally overwhelms surface water and underground drainage systems.

Return Period - The return period is means of expressing the likelihood or probability of flooding or a particular flood event occurring and is comparable to the AEP of the event. A 1% AEP flood indicates the flood event that will occur or be exceeded on average once every 100 years and has a 1 in 100 chance of occurring in any given year.

'Sequential Approach' - The 'Sequential Approach' is a risk-based method to guide development away from areas that have been identified through a flood risk assessment as being at risk from flooding.

Site Specific Flood Risk Assessment – An examination of the risks from all sources of flooding of the risks to and potentially arising from development on a specific site, including an examination of the effectiveness and impacts of any control or mitigation measures to be incorporated in that development.

Strategic Flood Risk Assessment (SFRA) - The assessment of flood risk on a wide geographical area against which to assess development proposed in an area (Region, County, Town).

Surface Water Management – This activity focuses on the assessment and management of flood risk within the urban environment from sources primarily resulting from intense rainfall. Surface water management should understand the performance of the urban drainage network, where exceedance flow routes would form and what impact this would have. Solutions to surface water flood risk can involve green infrastructure provision to capture and direct these excessive flows to lower vulnerable areas or open space. New development can provide solutions to reducing run-off not only from the proposed development also from existing areas. This should be considered in the SFRA in critical areas where development is planned upstream of flooding hotspots**.**

Sustainable Drainage Systems (SuDS) - A form of drainage that aims to control run-off as close to its source as possible using a sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques.

Source: Definitions are for the most part sourced from the DEHLG / OPW Guidelines for Planning Authorities on 'The Planning System and Flood Risk Management, 2009'.

Appendix 1B: Old Connaught Tributary Flood Risk Assessment

Old Connaught Tributary, Old Connaught Avenue, Bray

Flood Risk Assessment

242197-PUNCH-XX-XX-RP-C-0001

February 2025

Document Control

Document Number: **242197-PUNCH-XX-XX-RP-C-0001**

Status	Rev	Description	Date	Prepared	Checked	Approved
C01	A0	Final Report	27/02/2025	C. Shannon	J. Tiernan	J. Tiernan

Table of Contents

PUNCH consulting engineers
Old Connaught Tributary, Old Connaught Avenue, Bray
Flood Risk Assessment

1 Executive Summary

PUNCH Consulting Engineers were appointed by Dun Laoghaire Rathdown County Council (DLRCC) to carry out a Flood Risk Assessment (FRA) for the Old Connaught Tributary Catchment upstream of the M11 Motorway, north-west of Bray, Co. Wicklow. The purpose of this assessment is to reanalyse the predicted flood extents within the catchment and to verify the accuracy of the CFRAMS flood extent mapping. This assessment follows the guidelines set out in the OPW's *The Planning System & Flood Risk Management Guidelines* (2009) and the Dun Laoghaire Rathdown County Development Plan (CDP).

The FRA involved comprehensive analyses, including a desktop study, hydrological assessments, hydraulic model development, and flood mapping. The study identified critical data sources, historical flood records, and infrastructure information.

The hydrological analysis utilised the CFRAMS predicted peak flows and refined the inflow locations by subdividing the catchment based on topography and drainage. Future scenario peak flows incorporating climate change allowances were developed.

Advanced hydraulic modelling (1D and 2D) using Flood Modeller and Tuflow provided flood extent and depth maps for different scenarios. The analysis found that while floodwaters are largely contained within the river channel during a 1% AEP event, a 0.1% AEP event would lead to floodwaters exceeding the river's capacity. The predicted 0.1%AEP event causes significant overland flooding in the downstream catchment area, impacting the M11 motorway. This event also causes significant surcharging at a manhole on Old Connaught Avenue.

A sensitivity analysis revealed that the hydraulic models are moderately sensitive to roughness variations and highly sensitive to peak inflow increases.

A comprehensive comparison was carried out between the hydraulic model produced for this FRA and the CFRAMS hydraulic model. Key differences in the FRA model include the addition of an upstream throttle pipe, culvert upsizing, and inflow redistribution. As a result, the flood extents produced by the FRA model are significantly different from the CFRAMS flood extent mapping around Old Connaught Avenue in both the 1%AEP and the 0.1%AEP events. The 0.1%AEP flood extent on the M11 motorway produced using the FRA model is similar, but less extensive than the CFRAMS flood extent. Based on these results the OPW's Flood Mapping Review Programme have been asked to review this FRA document with the view to updating the CFRAMS mapping as appropriate.

This FRA provides insights for flood risk mitigation and infrastructure planning, ensuring informed decision-making for future flood management strategies. It is intended that the outcome of this assessment will inform the DLRCC Local Area Plan (LAP) for Old Connaught currently in development.

PUNCH consulting engineers
Old Connaught Tributary, Old Connaught Avenue, Bray
Flood Risk Assessment

2 Introduction

2.1 Background

PUNCH Consulting Engineers were appointed by Dun Laoghaire Rathdown County Council (DLRCC) to carry out a Flood Risk Assessment (FRA) for the Old Connaught Tributary Catchment upstream of the M11 Motorway, north-west of Bray, Co. Wicklow. The purpose of this assessment is to reanalyse the predicted flood extents within the catchment and to verify the accuracy of the CFRAMS flood extent mapping.

This FRA report aims to identify the existing fluvial flood risk within the Old Connaught Tributary catchment and compare it against the OPW's Catchment Flood Risk Assessment and Management Study (CFRAMS) flood risk mapping. To do this, a hydrological assessment will be undertaken to confirm the accuracy of the CFRAMS design flows. From here, a 1D/2D linked hydrodynamic model of the Old Connaught Tributary from Ferndale Road to the M11 will be constructed using Flood Modeller and Tuflow software. The design flows will then be run through the hydrodynamic model and revised flood extent maps produced. A sensitivity analysis will be undertaken to identify any vulnerabilities and to ensure the robustness of the assessment.

It is intended that the outcome of this assessment will inform the DLRCC Local Area Plan (LAP) for Old Connaught currently in development.

2.2 Catchment Description

The Old Connaught Tributary rises in Carrickgollogan Hill on the eastern edge of the Dublin Mountains, north-west of Bray, Co. Wicklow. From Carrickgollogan the catchment falls in a south-easterly direction towards the M11 motorway. The catchment is approximately 2.41km^2 in size and encompasses large areas agricultural land, Old Conna Golf Club and a small number of residential dwellings as shown in Figure 2-1.

The ground levels within the catchment fall from a high point of 260mAOD at Carrickgollogan Hill to 20mAOD along the eastern boundary. The M11 runs along the eastern boundary of the catchment and lies about 3.5 meters below the upstream land.

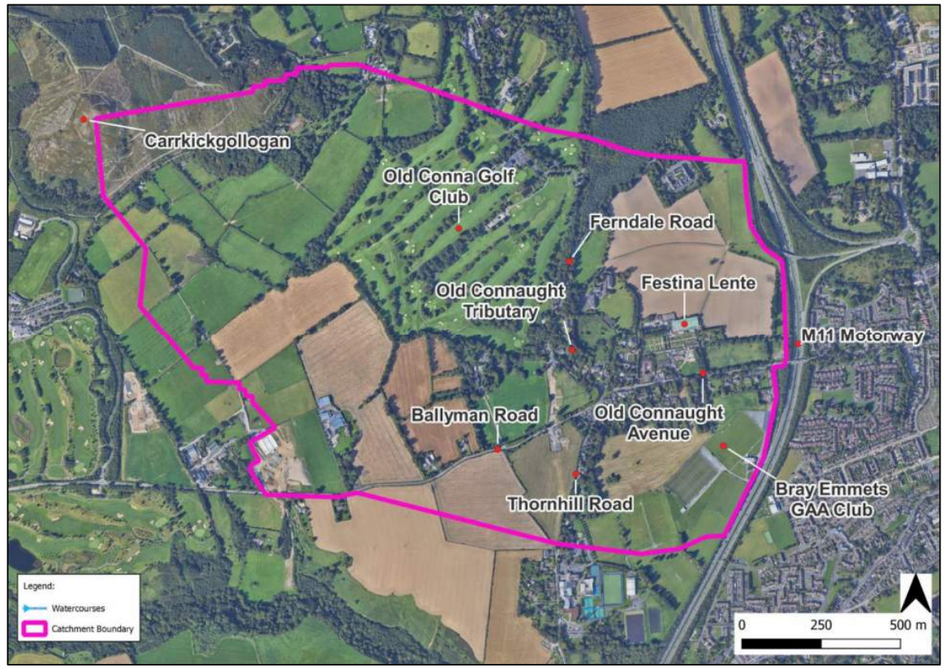


Figure 2-1: Catchment Boundary

PUNCH consulting engineers
Old Connaught Tributary, Old Connaught Avenue, Bray
Flood Risk Assessment

3 Relevant Guidance

3.1 The Planning System and Flood Risk Management Guidelines

In September 2008, "The Planning System and Flood Risk Management" Guidelines were published by the Department of the Environment, Heritage and Local Government in Draft Format. In November 2009, the adopted version of the document was published.

The Flood Risk Management Guidelines give guidance on flood risk and development. The guidelines recommend a precautionary approach when considering flood risk management in the planning system. The core principle of the guidelines is to adopt a flood risk sequential approach to managing flood risk and to avoid development in areas that are at risk. The sequential approach is based on the identification of flood zones for river and coastal flooding. The guidelines include definitions of Flood Zones A, B and C, as noted in Table 3-1 below. It should be noted that these do not take into account the presence of flood defences, as there remain risks of overtopping and breach of the defences.

Table 3-1: Flood Zone Designation

Flood Zone	Type of Flooding	Annual Exceedance Probability (AEP)
Flood Zone A	Coastal	Less than a 1:200 (0.5% AEP) year event
	Fluvial	Less than a 1:100 (1% AEP) year event
Flood Zone B	Coastal	Greater than a 1:200 (0.5% AEP) and less than a 1:1000 (0.1% AEP) year event
	Fluvial	Greater than a 1:100 (1% AEP) and less than a 1:1000 (0.1% AEP) year event
Flood Zone C	Coastal	Greater than a 1:1000 (0.1% AEP) year event
	Fluvial	Greater than a 1:1000 (0.1% AEP) year event

Once a flood zone has been identified, the guidelines set out the different types of development appropriate to each zone. Exceptions to the restriction of development due to potential flood risks are provided for through the use of the **Justification Test**, where the planning need and the sustainable management of flood risk to an acceptable level must be demonstrated. This recognises that there will be a need for future development in existing towns and urban centres that lie within flood risk zones, and that the avoidance of all future development in these areas would be unsustainable.

A three staged approach to undertaking an FRA is recommended:

Stage 1: Flood Risk Identification – Identification of any issues relating to the site that will require further investigation through a Flood Risk Assessment;

Stage 2: Initial Flood Risk Assessment – Involves establishment of the sources of flooding, the extent of the flood risk, potential impacts of the development and possible mitigation measures;

Stage 3: Detailed Flood Risk Assessment – Assess flood risk issues in sufficient detail to provide quantitative appraisal of potential flood risk of the development, impacts of the flooding elsewhere and the effectiveness of any proposed mitigation measures.

This report addresses the requirements for 3.

3.2 Dún Laoghaire-Rathdown County Council Development Plan 2022 – 2028

Policies relating to flood risk within the Dún Laoghaire-Rathdown County Council (DLRCC) County Development Plan (CDP) 2022-2028 are outlined in Chapter 10 (Environmental Infrastructure and Flood Risk). The relevant excerpts of the CDP are as follows:

- *Section 10.2.1 - "DLR need water and wastewater infrastructure in the right locations to support climate resilient growth in accordance with the regional settlement strategy and also to protect the environment".*
- *Section 10.7 - "Flood risk needs to be considered at all stages of the land use planning process and managed in an environmentally sensitive way".*
- *Section 10.7.2 – "It is a Policy Objective to support, in cooperation with the OPW, the implementation of the EU Flood Risk Directive (20010/60/EC) on the assessment and management of flood risks, the Flood Risk Regulations (SI No 122 of 2010) and the Department of the Environment, Heritage and Local Government and the Office of Public Works Guidelines on 'The Planning System and Flood Risk Management' (2009) and relevant outputs of the Eastern District Catchment and Flood Risk Assessment and Management Study (ECFRAMS Study)."*

A Strategic Flood Risk Assessment (SFRA) was prepared to accompany the DLRCC CDP (Appendix 15) and states the following in relation to the preparation of an SSFRA:

- *Site Specific Flood Risk Assessment (SSFRA) – a site or project specific flood risk assessment to consider all types of flood risk associated with the site and propose appropriate site management and mitigation measures to reduce flood risk to and from the site to an acceptable level. An assessment of all sources of flood risk is required on every site. It should consider residual risks, such as surcharging of the stormwater system, culvert blockage or defence overtopping, and access / evacuation plans are likely to form important elements of the assessment. There may also be a requirement for a detailed channel and site survey, and hydraulic modelling.*

The Justification Test for Development Plans, outlined in the OPW's Planning System and Flood Risk Management Guidelines, has been applied to the Old Connaught LAP area (see Section 6.2.7 of the DLR CDP SFRA). The SFRA states that this Justification Test has been passed for the Old Connaught area, but makes the following points:

- *Flood risk in the main arises from overland flows as a result of under capacity of the water course upstream of the village. It is noted that a surface water pipe has been installed to mitigate flood risk in the village environs. Whilst providing benefits to existing development, it is important that residual risks, such as through culvert blockage should be addressed through LAP SFRA and policy objectives / site specific flood risk assessment.*
- *The CFRAM Study also indicates that climate change impacts on flood extents could be significant. It is important that the LAP SFRA also reviews the likely impact of climate change, and where appropriate, incorporates measures for management of such risks, both in the plan making stage and by adopting the design recommendations contained in this County Development Plan SFRA.*
- *Proposed development in and adjacent to Flood Zone A and B will have to include for the management of flooding on site, and within the scope of the site-specific FRA.*
- *Use of the sequential approach should be presented in a masterplan which should demonstrate that there is no highly vulnerable development within Flood Zones A or B.*
- *There should be no loss of floodplain storage for the 1% AEP event and the impact of any changes to ground levels and storage areas as part of flood management proposals should be assessed for the 0.1% AEP flood.*
- *As overland flow is the primary source of flood risk, it is important that conveyance routes through the site are maintained.*
- *The SSFRA will also need to demonstrate there is no impact in flood risk to third party lands.*

PUNCH consulting engineers
Old Connaught Tributary, Old Connaught Avenue, Bray
Flood Risk Assessment

3.3 Land Zoning

The lands within the Old Connaught Tributary catchment area upstream of the M11 motorway are zoned a mixture of A1, F, G, GB and SNI in the DLRCC CDP 2022-2028. The relevant zoning objectives are as follows:

- *Objective A1 - To provide for new residential communities and sustainable Neighbourhood Infrastructure in accordance with approved local area plans.*
- *Objective F - To preserve and provide for open space with ancillary active recreational amenities.*
- *Objective G - To protect and improve high amenity areas.*
- *Objective GB - To protect and enhance the open nature of land between urban areas.*
- *Objective SNI - To protect, improve and encourage the provision of sustainable neighbourhood infrastructure.*

An extract from DLRCC CDP Land Zoning Map 14 is shown in Figure 3-1 below.

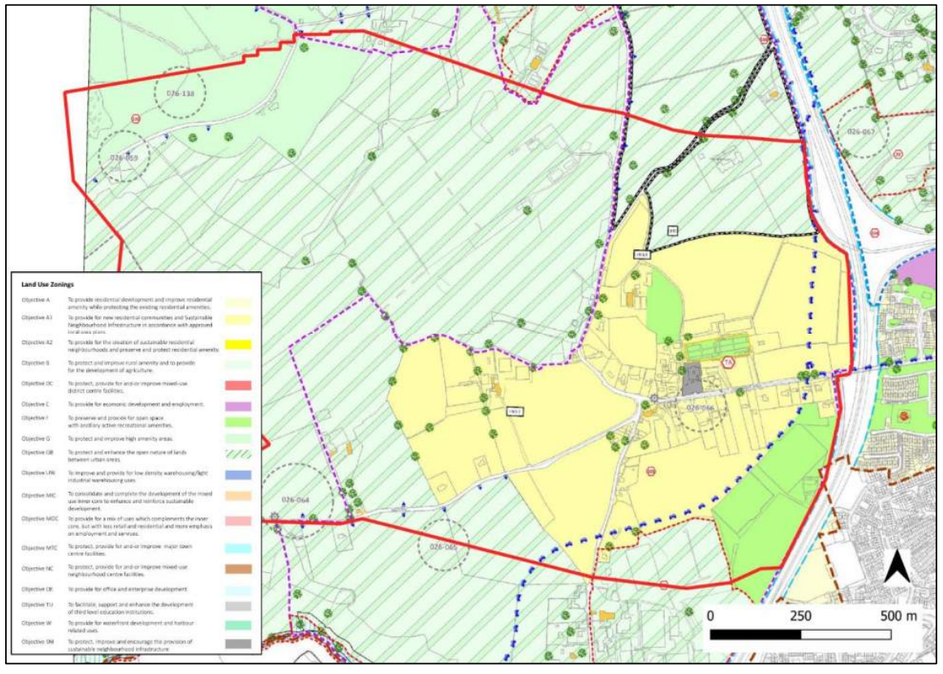


Figure 3-1: Extract from DLRCC CDP 2022-2028 Land Use Zoning Map 14

3.4 Flood Risk Management Plan (FRMP)

The OPW publish Flood Risk Management Plans detailing the feasible range of flood risk management measures proposed for their respective river basins. The Flood Risk Management Plan for the Avoca-Vartry River Basin was published by the OPW in 2018 and is valid for the period 2018-2021. The plan lists current flood management measures in place and potentially viable Flood Relief Works.

The FRMP notes the completion of the Old Connaught Scheme in 2015 as follows:

"The scheme, that comprised a new culvert bypass, provides protection against a 1:100 year flood event (1% Annual Exceedance Probability) for 10 plus properties, against flooding from the Old Connaught Stream."

The FRMP recommends the development of a Flood Relief Scheme for Old Connaught and Wilford AFA which may include:

"…physical works, such as a series of hard defences (flood embankments and walls) in conjunction with, a culvert upgrade and channel dredging at the Dublin Road adjacent to St Brendan's School, and a flow diversion channel on the Old Connaught River. The hard defences would protect to the 1% AEP fluvial flood event, with an average height of 1.0m (reaching a maximum height of 1.7m) and a total length of 1.1km."

4 Flood Risk Identification

4.1 Survey Data

4.1.1 Walkover Survey

PUNCH Consulting Engineers visited the catchment area on 30/07/2024 and 13/09/2024 in order to identify the key features of the watercourse, to establish any potential sources of flooding and to identify the likely routes of flood waters. Appendix A contains a selection of key images taken during this visit.

4.1.2 Topographic Survey of Site

A topographical survey of a site within the catchment area was completed by Apex Surveys and provided to PUNCH Consulting Engineers to assist in the design and preparation of this FRA. This survey was carried out in October 2023 and the survey extent is shown in Figure 4-1 below. The full topographic survey information is included in Appendix B.

Figure 4-1: Topographic Survey Extents

4.1.3 LiDAR Data

LiDAR (Light Detection and Ranging) data is a type of remote sensing information obtained using LiDAR technology. It involves emitting laser pulses from a sensor, typically mounted on an aircraft or drone, and measuring the time it takes for the laser to reflect back from the ground or objects. This process creates highly detailed, accurate 3D representations of the Earth's surface and features, including vegetation, buildings, and terrain. For the purposes of this assessment Digital Elevation Model (DEM) data is utilised which shows model elevation data without including surface features such as buildings, vegetation, or other objects. It provides a bare-earth view, representing the ground's topography.

The Geological Survey of Ireland's (GSI) online Open Topographic Data Viewer provides processed LiDAR data in Raster format for large areas across Ireland. For the purposes of this FRA, the LiDAR tile labelled OPW_3340 has been downloaded and is shown in Figure 4-2 below. This tile covers approximate 4km^2 with a grid resolution of 2m and was captured in 2011.

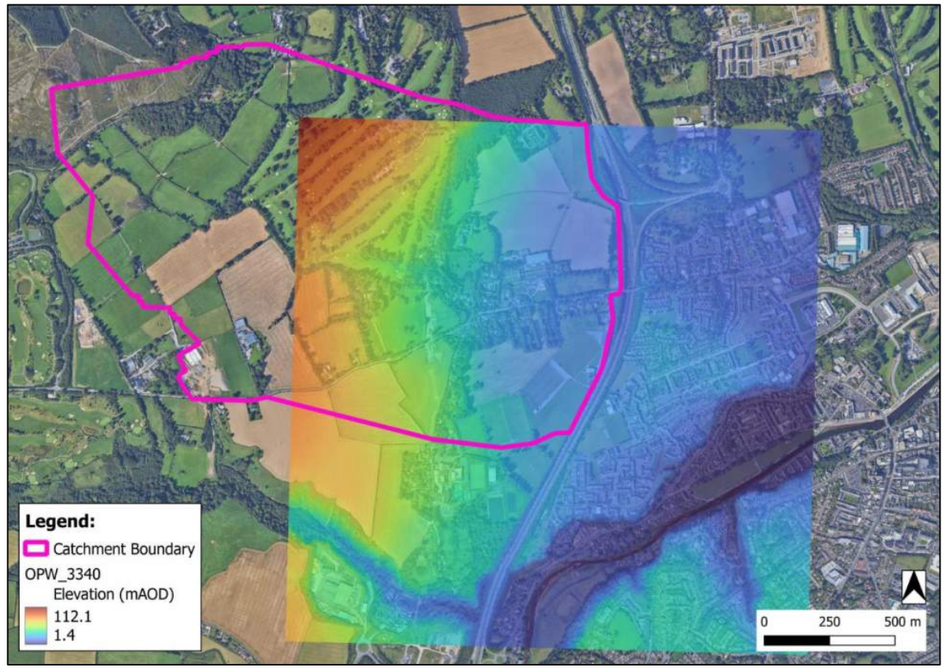


Figure 4-2: LiDAR Data Extent[1]

4.1.4 CFRAMS River Survey Data

A river channel survey of Old Connaught Tributary was carried out by Murphy Surveys in 2012 for the Eastern CFRAM Study. This data is now publicly available on the OPW's Flood Info website (www.floodinfo.ie) and an extract from the survey data showing the cross-section locations is shown in Figure 4-3.

[1] Contains Irish Public Sector Data (Geological Survey Ireland & the Office of Public Works) licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence

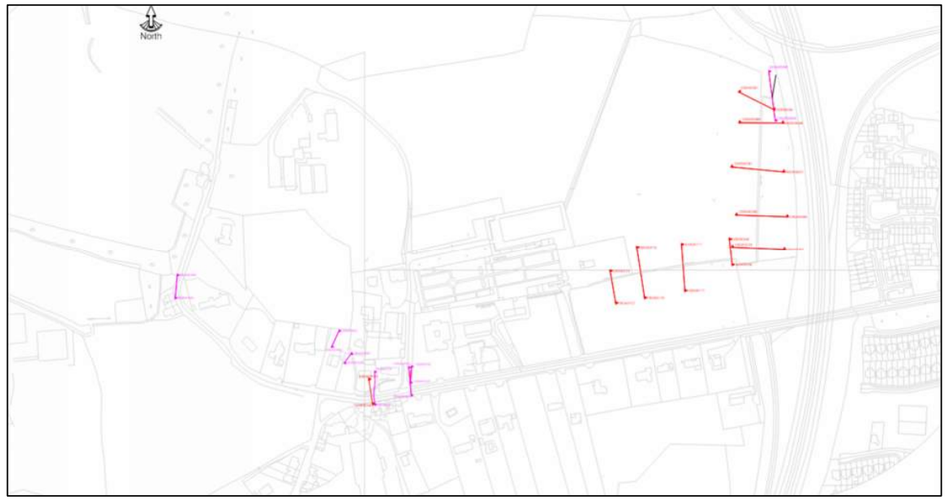


Figure 4-3: Extract from CFRAMS River Channel Survey Drawing

4.1.5 Surface Water Drainage Network

A review of the surface water drainage network in the area was undertaken based on the Uisce Eireann GIS database. The drainage network within the catchment is limited to Old Connaught Avenue and Ballyman/Thornhill Road. Figure 4-4 below is an extract from the Web Map Service for Irish Water's existing surface water drainage records. The drawing indicates:

1. Old Connaught Tributary enters a 1200mm diameter culvert upstream of Ferndale Road and is then split between a 900mm diameter pipe flowing south down Old Connaught Avenue and a 300mm diameter pipe flowing east into a private garden. The pipe down Old Connaught Avenue increases in size to 1200mm diameter after a length of approximately 165m and continues at this size until it turn approximate 115 degrees and enters an open channel upstream of the M11 motorway. The 900mm/1200mm diameter storm sewer along Old Connaught Avenue was laid in 2015 in response to recurrent flooding issues in the area.

2. The 300mm diameter pipe entering a private garden downstream of Ferndale Road discharges into an open drain before entering and exiting a series of culverts. The culverts increase in size from 300mm to 600mm before discharging into an open channel upstream of the M11 motorway.

3. A 300mm diameter uPVC storm sewer is shown flowing west – east along Old Connaught Avenue, towards the eastern boundary of the catchment. This pipe then upsizes to a 375mm diameter concrete pipe, prior to connection to the 1200mm storm water sewer discussed in point 1 above, therefore also flowing into the same open drain.

4. There is a 225mm diameter uPVC storm sewer along Ballyman Road which converges with a short length of 225mm diameter pipe along Thornhill Road before discharging into the 1200mm diameter sewer along Old Connaught Avenue.

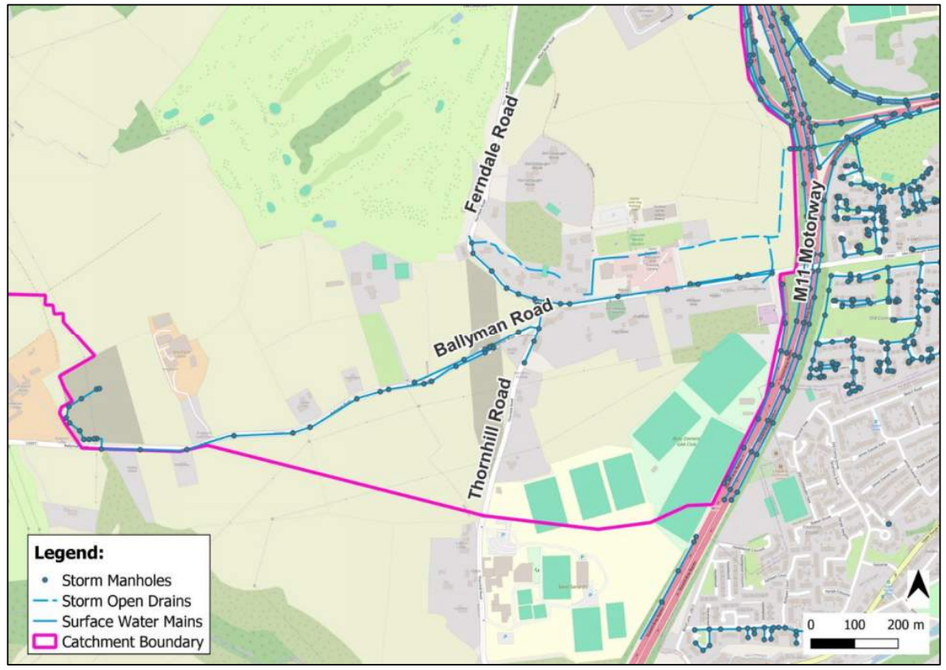


Figure 4-4: Existing Stormwater Drainage

4.2 Existing Hydrological Environment

The existing hydrological environment is characterised primarily by the presence of the Old Connaught Tributary which rises at Carrickgollogan Hill and flows south-eastwards towards Ferndale Road. At this point the stream enters a 1200mm culvert and a bifurcation manhole where it is divided between a 900mm dia. pipe flowing down Old Connaught Avenue and a 300mm diameter pipe flowing eastwards into an adjacent private garden. The two legs of the watercourse continue along separate trajectories until they converge again upstream of the M11 motorway. At this location the stream continues in an open channel until it turns and enters a culvert before dropping down under the M11 motorway. This defines the eastern boundary of the catchment for the purposes of this FRA. The path of the Old Connaught Tributary is shown in Figure 4-5 below.

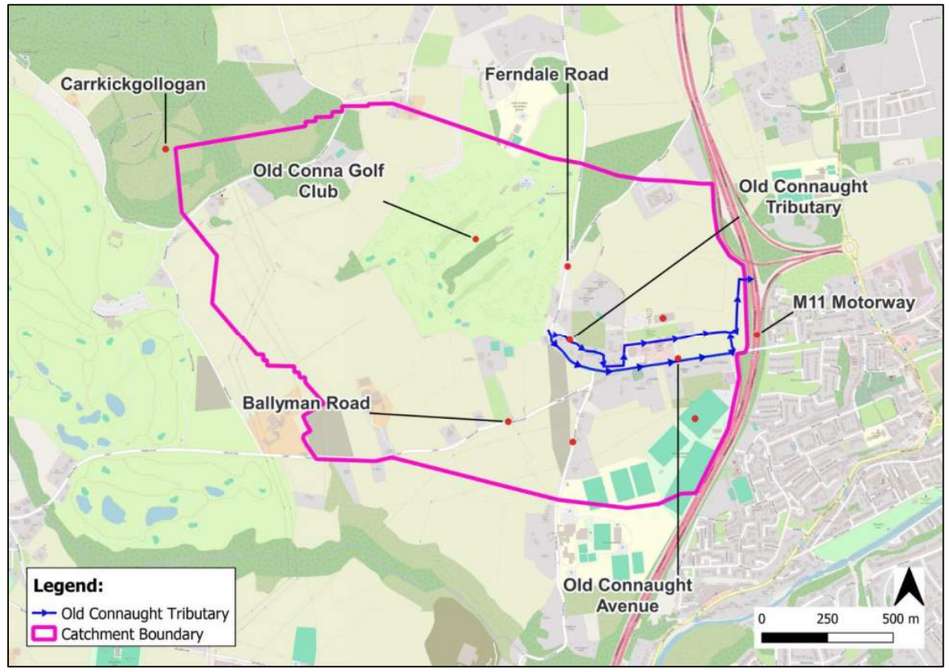


Figure 4-5: Hydrological Environment

4.3 Review of Historic Mapping

A review of the OSI Historical maps[2] was carried out. Figure 4-6 shows an extract from the 6-inch historic map for the catchment. No areas within the catchment are indicated as "liable to flood" in the available historic OSI maps.

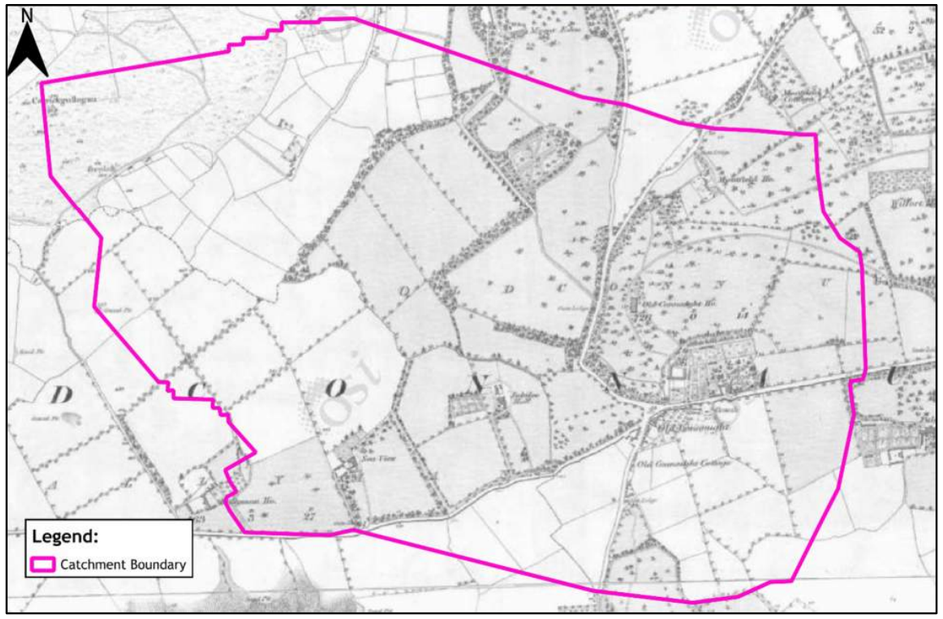


Figure 4-6: Extract from OSI historical 6-inch (First Edition) map.

[2] Maps available: http://map.geohive.ie/mapviewer.html

4.4 History of Flooding

The Office of Public Works (OPW) Flood Hazard Mapping website holds a record of historic flood events.

A review of the database indicated that there was a recurring instance of flooding on Old Connaught Avenue, as shown in Figure 4-7. The flood event on Old Connaught Avenue (at ref:2030) is noted as "occasional flooding, due to either blockages, or hydraulic inadequacy". It should be noted that this recurring flooding pre-dates the construction of the 900mm/1200mm surface water pipe along Old Connaught Avenue.

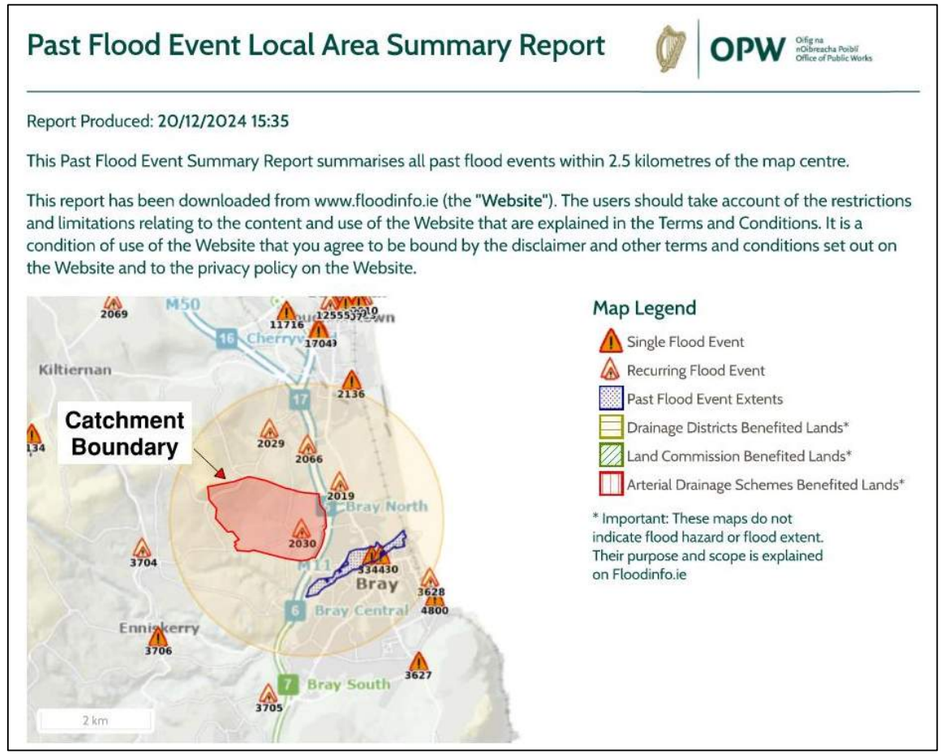


Figure 4-7: Extract from OPW Flood Maps Database Report (see Appendix C for Full Report).

See Appendix C for full OPW Past Flood Event Summary Report for the area. Please note this is not a guaranteed record of all flood events.

4.5 Catchment Geology

The geology of the catchment was reviewed using data from the Geological Survey of Ireland (available at www.gsi.ie). Figure 4-8 shows that the quaternary geology of the catchment is made up of a combination of 'Gravels derived from limestone', 'Scree', 'Till derived from metamorphic rocks', 'Till derived from granites' and 'Irish Sea Tills derived from limestone'.

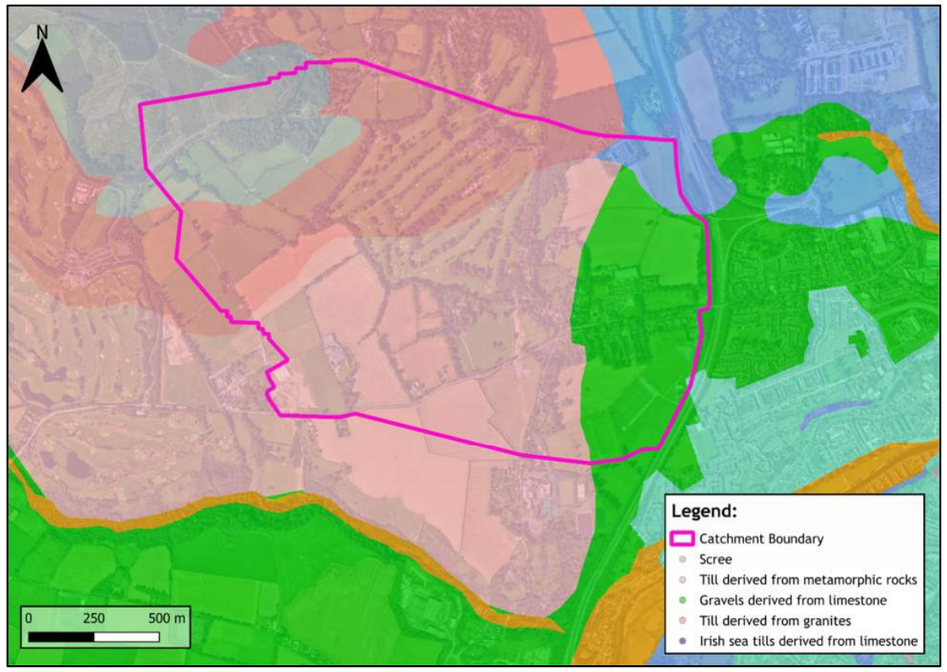


Figure 4-8: Quaternary Geology (source Geological Survey of Ireland *(www.gsi.ie)*)

4.6 Groundwater Flooding

From a review of the Geological Survey of Ireland database, there appears to be no identifiable groundwater flood risk associated with the catchment.

4.7 Pluvial Flooding

Pluvial flooding is the result of rainfall-generated overland flows which arise before run-off can enter any watercourse or sewer. It is usually associated with high intensity rainfall. This FRA has not identified any historic pluvial flood risk areas within the catchment. However, a local landowner indicated that the area marked in Figure 4-9 below is subject to flooding after high intensity rainfall. The landowner attributes this flooding to recent damage to subsurface drainage infrastructure preventing runoff entering the Old Connaught Tributary.

Figure 4-9: Pluvial Flood Risk Area Identified by Landowner

4.8 Fluvial Flooding

Fluvial flooding is the result of a river exceeding its capacity and excess water spilling out onto the adjacent floodplain.

4.8.1 Catchment Flood Risk Assessment and Management Study (CFRAMS) Mapping

The CFRAMS is an OPW led national programme which seeks to identify and map potential existing and future flood hazard in areas at significant risk from flooding. It also aims to identify flood relief measures and prepare Flood Risk Management Plans for these areas.

The catchment is located in an area which has been assessed as part of Eastern CFRAMS Study. The OPW has published detailed flood hazard mapping for the area based on results from the CFRAMS. This includes flood extent and flood depth mapping for a number of return periods for fluvial and coastal flood events.

Figure 4-10 presents the CFRAMS fluvial flood extents in the area and shows that some areas within the catchment are located within Flood Zones A and B. The CFRAMS flood extent and depth mapping for the Old Connaught Tributary is included in Appendix D.

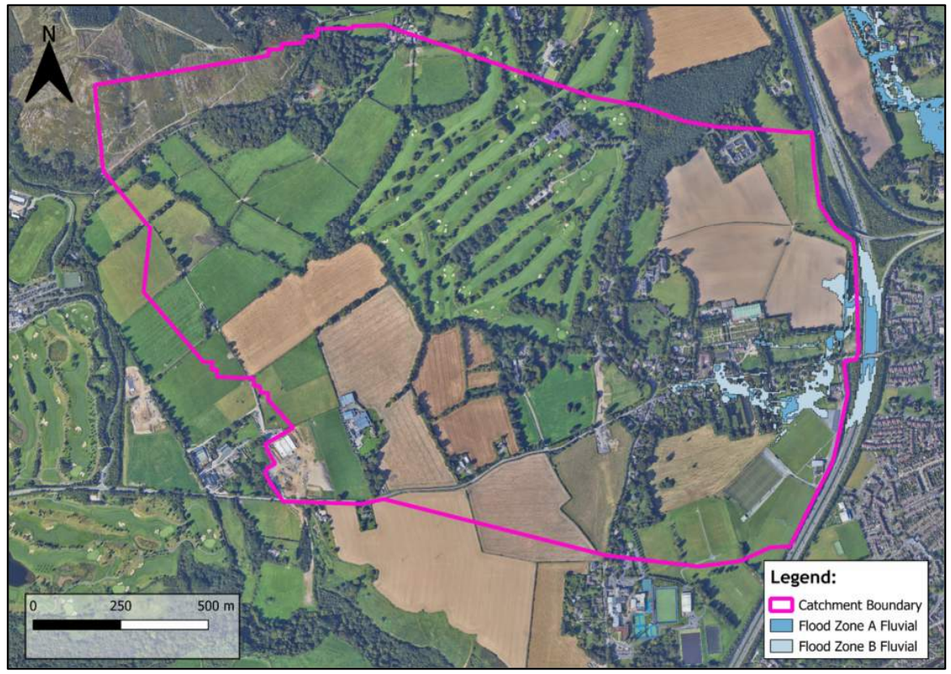


Figure 4-10: Fluvial Flood Extent.

4.9 Coastal Flooding

Coastal flooding results from sea levels which are higher than normal and result in sea water overflowing onto the land. The lands subject to this FRA are located 1.5km from the coast with a minimum ground level of approximately 18mAOD and are therefore not impacted by coastal flooding.

4.10 Existing Flood Defences

A review of available flood risk datasets has not identified any flood defences within the catchment. There is an earthen embankment located within a field along Old Connaught Avenue which may offer some flood protection.

4.11 DLRCC CDP 2022-2028 Strategic Flood Risk Assessment

A review of the DLRCC CDP 2022-2028 was carried out with regards to flood risk. A Strategic Flood Risk Assessment (SFRA), prepared as part of the DLRCC CDP, includes Flood Zone mapping for the area and highlights some areas of flood risk concern associated with Old Connaught Tributary. An extract from Flood Zone Map 14 for the Old Connaught area is shown in Figure 4-11.

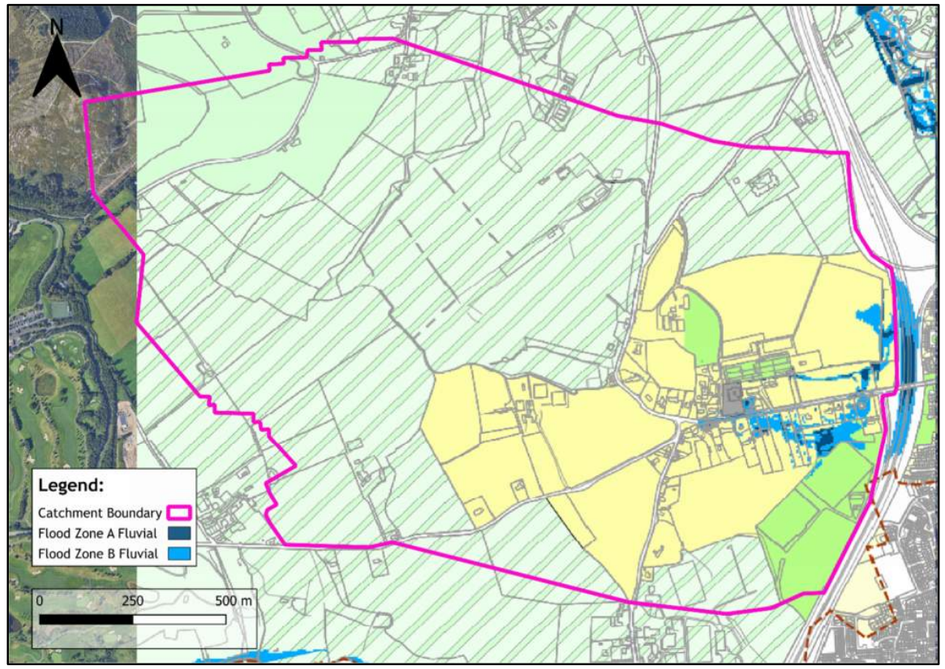


Figure 4-11: Extract from Dún Laoghaire-Rathdown County Council CDP 2022-2028 – Flood Zone Map 14

According to the DLRCC CDP Flood Zone Map of the area, the catchment is partially located within Flood Zones A and B.

5 Hydrological Assessment

5.1 Review of Eastern CFRAMS Design Flows

A detailed Hydrology Report was prepared in 2016 as part of the Eastern CFRAMS (Hydrometric Area (HA) 10) which included a hydrological analysis of the Old Connaught Tributary. The Old Connaught Tributary formed part of the larger Old Connaught and Wilford model, referred to as Model 2 in the Hydrological Report. As part of this analysis, design peak flows and inflow hydrographs for a range of return period events were developed using Flood Studies Update (FSU) techniques. This data was used in the Eastern CFRAMS hydraulic model of the Old Connaught and Wilford Model to produce flood extent and depth mapping for the area.

The inflow hydrographs were applied at the model boundaries and at key locations along the model extent to simulate laterally contributing sub-catchments. Check flows were calculated for different locations along the model reach to check that the peak flows in the model are as expected. Figure 5-1 is a reproduction of Figure 4.3 from the Eastern CFRAMS Hydrology Report (HA 10) and shows the CFRAMS hydraulic model extent of the Old Connaught and Wilford Model.

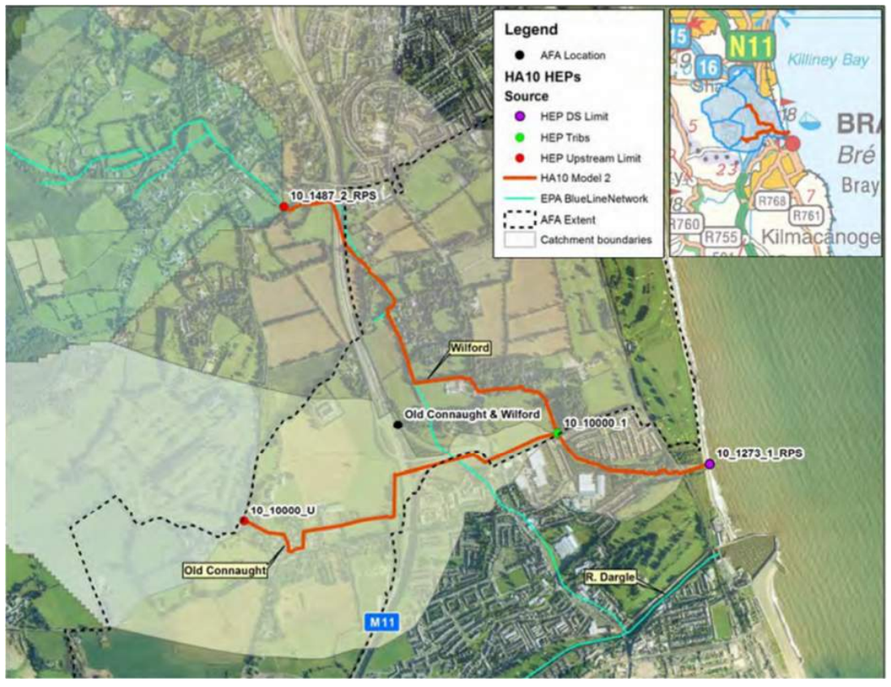


Figure 5-1: Extract from CFRAMS Old Connaught and Wilford Model Extent Map

The CFRAMS Old Connaught Tributary model is located between HEP Node 10_10000_U and HEP Node 10_10000_1, as shown in Figure 5-1. The catchment draining to Node 10_1000_1 does not include flow from HEP Node_10_1487_2_RPS (Wilford Stream).

Flows emanating from the HEP Node catchments were estimated using the FSU seven parameter catchment descriptor equation and adjusted based on the most hydrologically similar gauged site. The CFRAMS check flows calculated for these nodes are presented in Table 5-1. The flows at HEP Node 10_10000_1 are the sum of those from HEP Node 10_10000_U and the Top-Up Flow added between the nodes.

Table 5-1: Old Connaught Tributary CFRAMS Check Flows

HEP Reference	Annual Exceedance Probability (AEP)		
	10% (m^3/s)	1% (m^3/s)	0.10% (m^3/s)
10_10000_U	0.6	1.12	2.04
Top-Up Flow Added Between 10_10000_U and 10_10000_1	0.75	1.4	2.54
10_10000_1	1.35	2.52	4.58

The catchments associated with HEP Nodes 10_10000_U and 10_10000_1 are shown in Figure 5-2 and their respective areas are presented in Table 5-2. The CFRAMS predicted flow rate normalised by area has also been included in the Table 5-2 for the 1% and 0.1%AEP events.

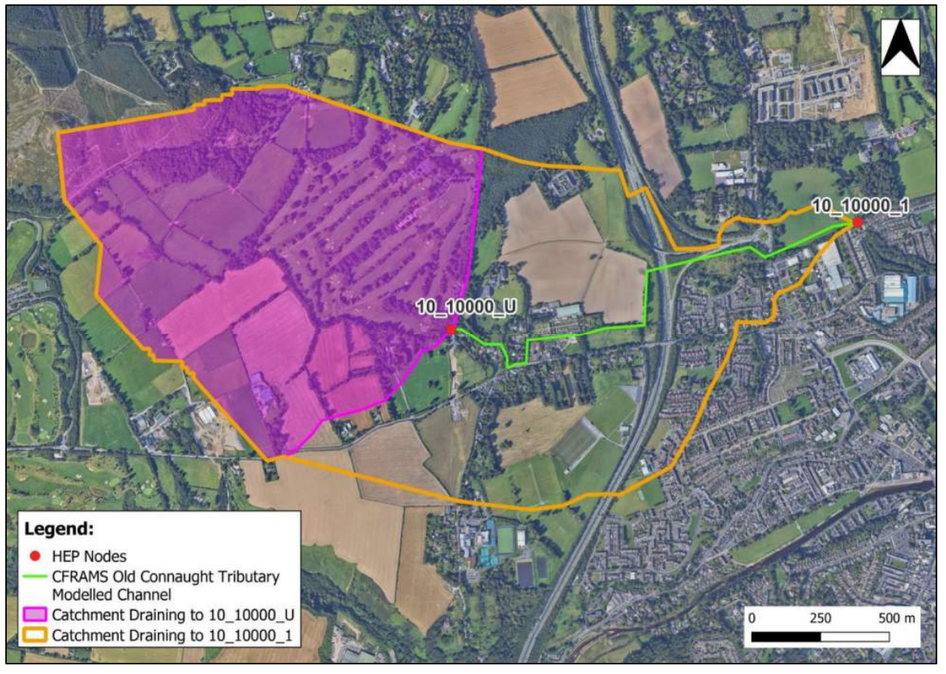


Figure 5-2: CFRAMS HEP Node Catchments

Table 5-2: CFRAMS Contributing Catchment Areas

HEP Reference	Area (km^2)	Flow Per km^2 1% (m^3/s)	Flow Per km^2 0.10% (m^3/s)
10_10000_U	1.38	0.81	1.48
10_10000_1	2.69	0.94	1.7

Examination of Table 5-2 reveals that the flow per km2 from HEP Node catchment 10_10000_1 is higher than that from catchment 10_1000_U which is indicative of the urbanisation of the lower reaches of the watercourse catchment.

5.1.1 CFRAMS Inflow Hydrographs

The design hydrograph shapes for the CFRAMS Wilford and Old Connaught Model were developed using the FSSR 16 Unit Hydrograph Methodology and the 1%AEP hydrographs for the HEP Nodes along Old Connaught Tributary are shown in Figure xx.

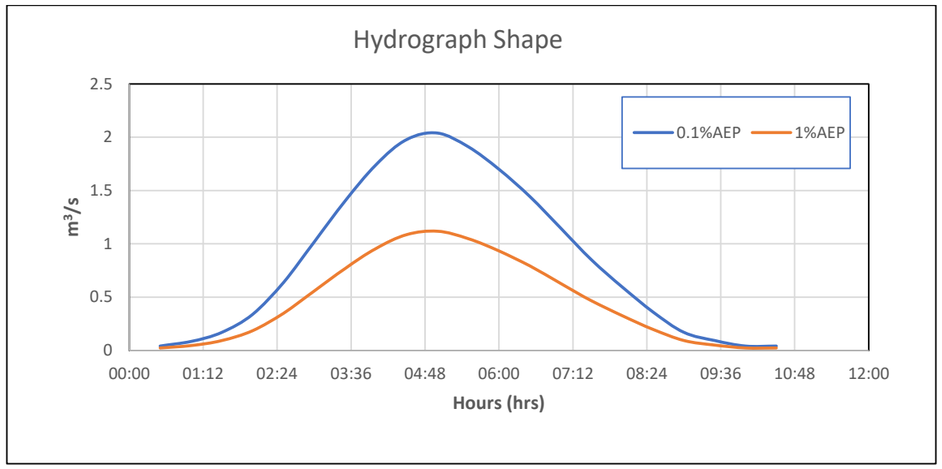


Figure 5-3: CFRAMS Wilford and Old Connaught Hydrograph Shape

5.1.2 IH124 Flow Check

To validate the estimated inflow to HEP Node 10_10000_U from the CFRAMS study, the Institute of Hydrology Equation No. 124 (IH124) methodology was applied. The IH124 method is suitable for catchments less than 25km^2 and as such is appropriate for this assessment.

below shows the catchment characteristics used and the resulting design flood flow estimates. The SAAR value has been taken from Met Eireann's 1991-2020 Annual Rainfall dataset. The SOIL value has been calculated with reference to the catchment geology (as shown in Section 3.3) and the Flood Studies Report Figure 4.18(I) (Winter Rainfall Acceptance Potential). A 1%AEP growth factor of 1.96 and a 0.1%AEP growth factor of 2.6 were applied to the Q_{BAR} estimate. A Climate Change (CC) allowance of +20% and a Factorial Standard Error (FSE) of 1.65 have also been applied to the flow estimates.

Table 5-3: IH124 Estimation of 1%AEP

1%AEP Estimation - IH124		
$Q = 0.00108\ AREA^{0.89} \times SAAR^{1.17} \times SOIL^{2.17}$		
AREA	km^2	1.38
SAAR	mm	967
SOIL	-	0.30
QBAR	m3/s	0.329
Q 1%AEP	m3/s	0.646
Q 1%AEP_{CC}	m3/s	0.775
Q 1%$AEP_{CC,FSE}$	m3/s	1.279
Q 0.1%$AEP_{CC,FSE}$	m3/s	1.696

It can be seen from Table 5-3 that the flow estimates produced by the IH124 are lower than those supplied by the CFRAMS hydrological assessment. The 1%AEP flow is 7% lower and the 0.1%AEP flow is 37% lower. The large discrepancy in the 0.1%AEP flow is likely due to a significant difference in the applied growth factors. The Eastern CFRAMS Hydrology Report details a large amount of work undertaken developing growth curves for rivers within this area using local, recorded hydrometric data. The growth factors adopted in Table 5-3 are taken from the Flood Studies Report (1975) and do not take account of such verified information. Therefore, it is deemed prudent to accept the larger CFRAMS flows as more accurate estimates.

5.1.3 Conclusion

Following a detailed review of the Eastern CFRAMS hydrology developed for the Wilford and Old Connaught Model, the CFRAMS design flows are deemed appropriate for use in this FRA. However, the catchment subject to this FRA differs from the CFRAMS catchment extent and therefore the inflow values and entry locations require adjustment. These adjustments are detailed in the following sections.

5.2 Contributing Sub-Catchments

The catchment subject to this FRA is presented alongside the CFRAMS HEP Node catchments in Figure 5-4 below. It can be seen from this image that the FRA catchment is bounded by the M11 motorway along its lower reaches. The southern extents differ slightly from the CFRAMS boundary due to the incorporation of areas draining to the existing storm water network.

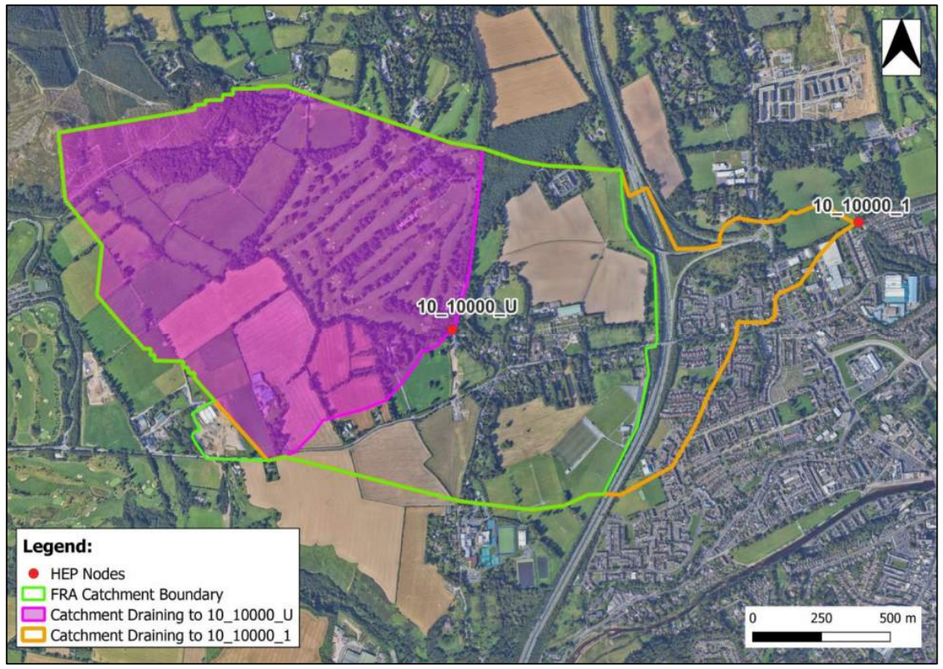


Figure 5-4: FRA Catchment Boundary

The FRA catchment is 2.41km^2 in size and has been subdivided into smaller sub-catchments based on ground topography and the existing surface water drainage system. The sub-catchments are shown in Figure 5-5 and the corresponding details are presented in Table 5-4. The catchment inflows will be applied to the hydraulic model as single 'Point' flows or as 'Distributed' flows applied at multiple points along the reach of the watercourse.

PUNCH consulting engineers
Old Connaught Tributary, Old Connaught Avenue, Bray
Flood Risk Assessment

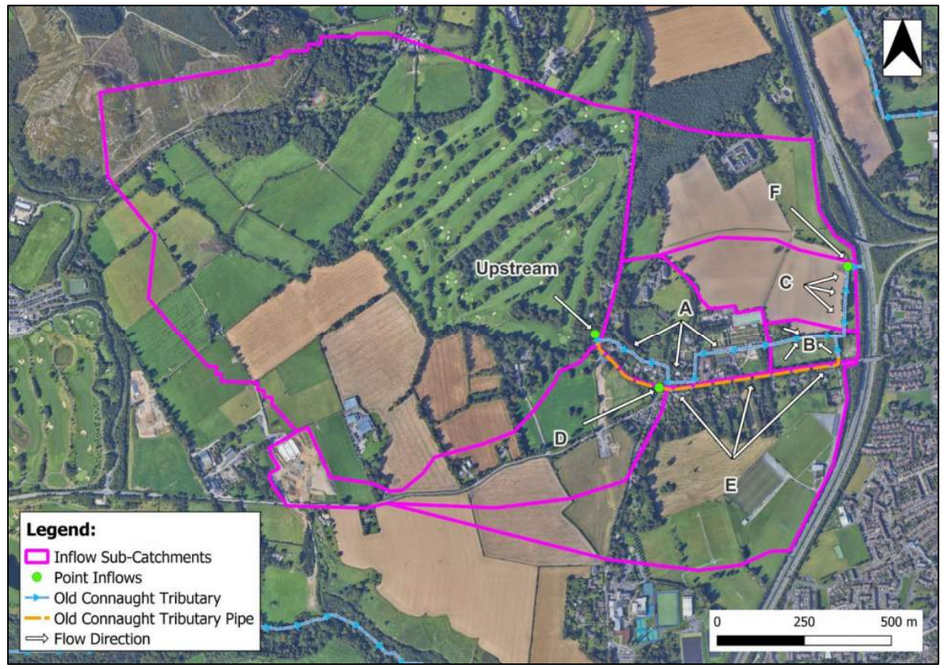


Figure 5-5: Inflow Sub-Catchments

Table 5-4: Inflow Sub-Catchment Details

Catchment	Area (km^2)	Inflow Type
Upstream	1.38	Point
A	0.13	Distributed
B	0.03	Distributed
C	0.10	Distributed
D	0.22	Point
E	0.35	Distributed
F	0.18	Point
Total	**2.41**	

5.3 Development of Inflows for Hydraulic Modelling

5.3.1 Existing Scenario

The CFRAMS predicted flows for HEP NODE 10_10000_U will be used as the inflows for the catchment labelled 'Upstream'. To generate inflows for the remaining sub-catchments the flow rates normalised by area for the catchment upstream of 10_10000_1 (see Table 5-2) have been applied to the sub-catchment areas and the resulting flows are presented in Table 5-5.

Table 5-5: Sub-Catchment Inflows

Catchment	Area (km²)	1%AEP (m³/s)	0.1%AEP (m³/s)	Inflow Type
Upstream	1.38	1.12	2.04	Point
A	0.13	0.12	0.22	Distributed
B	0.03	0.03	0.05	Distributed
C	0.1	0.09	0.17	Distributed
D	0.22	0.20	0.37	Point
E	0.35	0.33	0.60	Distributed
F	0.18	0.17	0.31	Point
Total	**2.41**	**2.07**	**3.76**	

5.3.2 Future Scenarios

5.3.2.1 Climate Change

Advice on the expected impacts of climate change and the allowances to provide for future flood risk management in Ireland is given in the OPW's "Flood Risk Management Climate Change Sectoral Adaptation Plan", 2019. Two climate change scenarios are considered. These are the Mid-range Future Scenario (MRFS) and the High-End Future Scenario (HEFS). The MRFS is intended to represent a "likely" future scenario based on the wide range of future predictions available. The HEFS represents a more "conservative" future scenario at the upper boundaries of future projections.

A table summarising the recommended climate change allowances is provided in Table 5-1 of the "Flood Risk Management Climate Change Sectoral Adaptation Plan" and in Table 5-1 of the DLR CDP SFRA Report. This table has been reproduced here as Table 5-6. These climate change allowances have been utilised in the CFRAMS.

Table 5-6: Recommended allowances for climate change

Parameter	MRFS	HEFS
Extreme Rainfall Depths	+20%	+30%
Peak Flood Flows	+20%	+30%
Mean Sea Level Rise	+500 mm	+1000 mm
Land Movement	-0.5 mm/year*	-0.5 mm/year*
Urbanisation	No general allowance - Review on Case by Case Basis	No General allowance - Review on Case by Case Basis
Forestation	-1/6Tp**	-1/3Tp** +10% SPR***

Notes:
* Applicable to the southern part of the country (Dublin - Galway and south of this)
** Reduction in the time to peak (Tp) to allow for potential accelerated runoff that may arise as a result of drainage of afforested land
*** Add 10% to the Standard Percentage Runoff (SPR) rate; This allows for temporary increased runoff rates that may arise flowing felling of forestry

5.3.2.2 CFRAMS Future Scenario

The Eastern CFRAMS HA10 Hydrology Report details future environmental and catchment changes relevant to the Old Connaught Tributary catchment. An analysis of this data indicates a likely increase in urbanisation in the region. However, significant uncertainty remains regarding the potential impacts this may have on flood risk within the catchment area due to the implementation of Sustainable Drainage Systems (SuDS). The CFRAMS predicted MRFS and HEFS check flows for HEP Nodes 10_10000_U and 10_10000_1 are presented in Table 5-7.

Table 5-7: Old Connaught Tributary CFRAMS Future Scenario Check Flows

HEP Reference	MRFS			HEFS		
	10% (m³/s)	1% (m³/s)	0.10% (m³/s)	10% (m³/s)	1% (m³/s)	0.10% (m³/s)
10_10000_U	0.75	1.4	2.54	1.01	1.89	3.43
10_10000_1	2.11	3.95	7.16	3.52	6.6	11.96

5.3.2.3 Future Scenario Design Flows

It is unclear from the Eastern CFRAMS HA10 Hydrology Report exactly how the MRFS and HEFS check flows were calculated for the Old Connaught Tributary Catchment. The available details in the CFRAMS documentation are insufficient for a comprehensive assessment of the applied climate change allowances. Therefore, we have opted to utilise the recommended allowances shown in Table 5-6 to calculate the sub-catchment Future Scenario inflows. The sub-catchment MRFS and HEFS inflows to be used in the hydraulic modelling element of the FRA are presented in Table 5-8.

Table 5-8: Sub-Catchment Future Scenario Inflows

Catchment	MRFS		HEFS		Inflow Type
	1%AEP (m³/s)	0.1%AEP (m³/s)	1%AEP (m³/s)	0.1%AEP (m³/s)	
Upstream	1.344	2.448	1.456	2.652	Point
A	0.14	0.26	0.15	0.28	Distributed
B	0.035	0.06	0.04	0.07	Distributed
C	0.112	0.20	0.12	0.22	Distributed
D	0.24	0.44	0.26	0.48	Point
E	0.39	0.72	0.43	0.77	Distributed
F	0.207	0.38	0.22	0.41	Point
Total	**2.48**	**4.51**	**2.68**	**4.89**	

5.3.3 Summary

The design flows to be used in the hydraulic modelling element of the FRA are presented in Table 5-5 and Table 5-8 above. These peak flows have been applied to the hydrograph shape shown in Figure 5-3 and incorporated into the model as inflow hydrographs.

6 Hydraulic Flood Modelling

6.1 Introduction

A 1D-2D linked hydraulic model was developed for this assessment, following standard practice for studies of this nature and aligning with the approach used in the CFRAMS project. The chosen software packages, Flood Modeller and TUFLOW, were integrated to create a combined 1D-2D hydraulic model

6.2 1D Model Development

Examination of Old Connaught Tributary reveals that there is a bifurcation of the stream immediately downstream of Ferndale Road. The watercourse enters a 1200mm diameter culvert upstream of Ferndale Road and is then split between a 900mm pipe flowing down Old Connaught Avenue (Piped Route) and a 300mm diameter pipe running into an adjacent private garden (Open Channel Route). The two legs of the watercourse continue along separate trajectories until they converge again upstream of the M11 motorway. The layout of Old Connaught Tributary is shown in Figure 6-1 below.

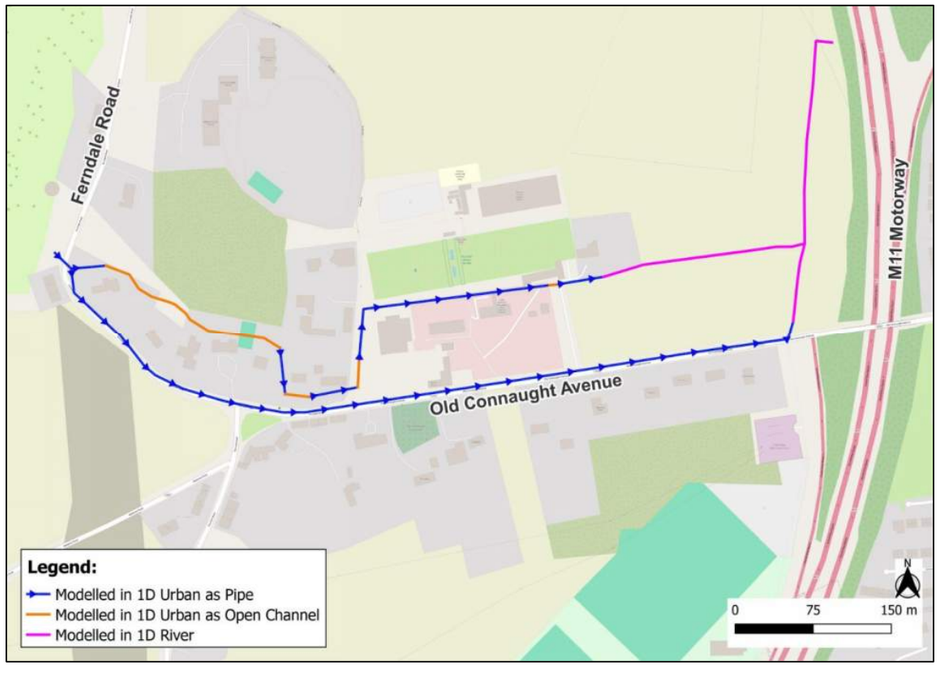


Figure 6-1: Old Connaught Tributary – 1D Model Layout

6.2.1 Flood Modeller 1D Urban

A large portion of the Old Connaught Tributary is conveyed within a culverted pipe network and, for the purposes of this assessment, has been modelled using the 1D Urban component of Flood Modeller. This software has been specifically designed for urban environments and allows for detailed simulation of piped drainage systems and floodwater exceedance. The 1D Urban modelling software is based on the open-source Storm Water Management Model (SWMM) developed by the US Environment Protection Agency (EPA).

DLRCC survey water network drainage records, in combination with the CFRAMS river channel survey data (detailed in Section xx) were utilised in the 1D Urban model build, and the model extent is shown in Figure 6-2.

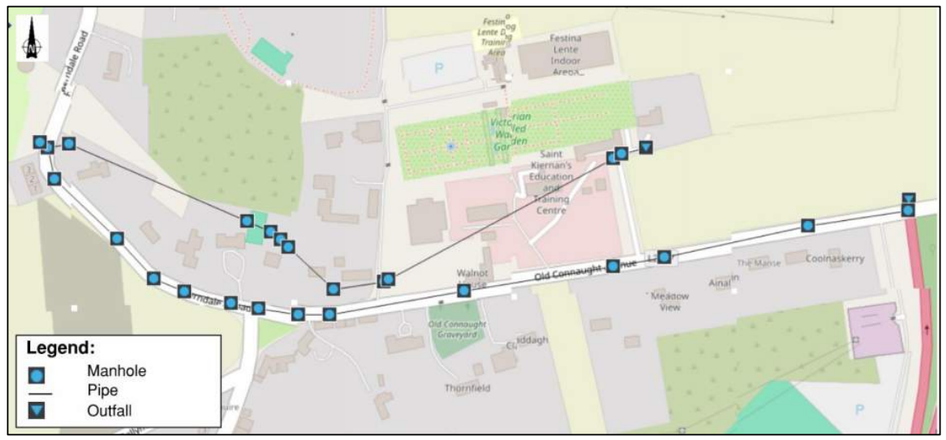


Figure 6-2: 1D Urban Model Extent

Hydraulic losses were manually added to the 1D Urban model as follows:

- Open Channel Roughness – Mannings n = 0.06
- Pipe Roughness – Mannings N = 0.013
- Culvert entrance and exit losses (varied as appropriate based on SWMM guidance)
- Manhole entrance and exit losses (varied as appropriate based on SWMM guidance)
- Losses at bends in manholes (varied as appropriate based on SWMM guidance)

The open channels sections of Old Connaught Tributary, included in the 1D Urban model, were modelled with irregular open channel cross-sectional profiles and the pipes between these channels defined as culverts.

Inflow hydrographs for all return period events were applied to the 1D Urban model for the Upstream, A, D and E catchments (catchment locations shown in Figure 5-5). Outflows from the 1D Urban model outfalls will be used as inflows to the 1D River model. When floodwaters exceed the capacity of the 1D Urban network, they can spill from the manholes into the 2D model domain.

Long-section outputs from the 1D Urban model have been included in Appendix E of this report. It can be seen from these results that floodwaters leave the 1D Urban network at a single point (Manhole 13) on Old Connaught Avenue in the 0.1%AEP MRFS and HEFS event scenario.

6.2.2 Flood Modeller 1D River

The 1D River component of Flood Modeller was used to simulate the open-channel sections of Old Connaught Tributary, downstream of the 1D Urban extent. The river channel details were taken from the topographical survey data where available and supplemented with information from the CFRAMS river survey. The 1D River model extent is shown in Figure 6-3 below:

Figure 6-3: 1D River Model Extent

A Manning's roughness value of 0.06 was assigned to the full 1D river cross-sections to represent a channel and banks with weeds, stones and other vegetation. The banks of the 1D river channel are linked to the 2D domain, which allows waters to 'spill' from the river to the floodplain.

6.3 2D Model Development

To evaluate the out-of-channel flood flow paths and flood risk near the proposed development, PUNCH developed a 2D hydraulic model. TUFLOW was the software selected for this purpose, utilising a ground model created from a combination of topographical survey and LiDAR data (discussed in Section 4.1). A grid size of 2 meters was adopted for the model. The extent of the TUFLOW 2D ground model developed for this assessment is shown in Figure 6-4. It can be seen from this figure that the area occupied by the river channel has been omitted from the 2D domain as it is included in the 1D River model.

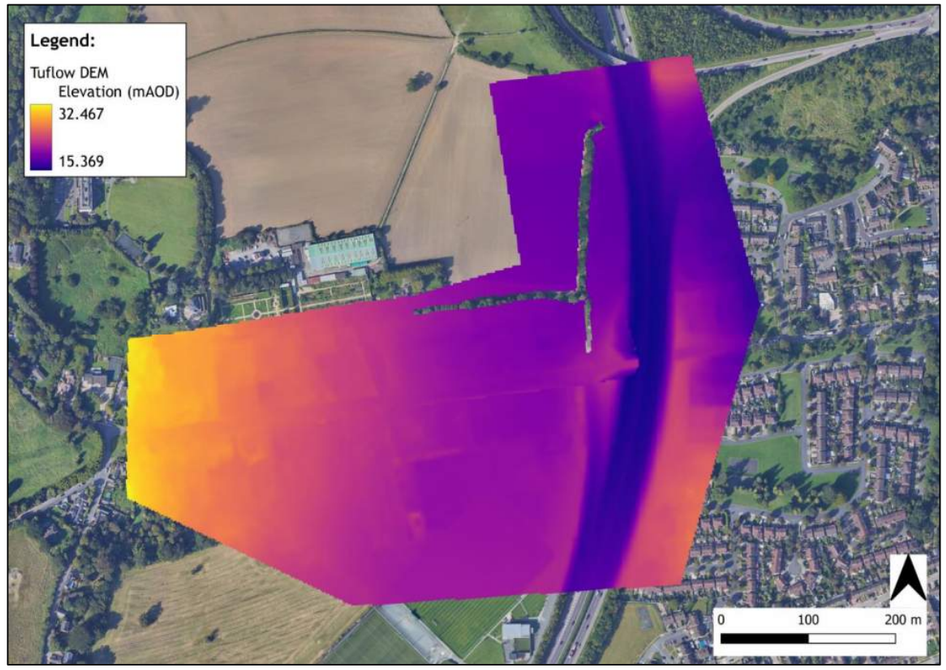


Figure 6-4: Tuflow DEM Model Extent

6.3.1 Surface Roughness

The 2D study area was classified into broad land use types based on the survey information, photographs of the surrounding area and aerial imagery. Each land classification was then assigned an appropriate Manning's 'n' roughness value based on the ground surface or the density of the vegetation present. Table 6-1 summarises the roughness values selected. The buildings within the study area were assigned a higher Manning's 'n' value to simulate the impediment to flow at the buildings. Roads, footpaths and other hard-standing areas within the floodplain were represented within the model using a Manning's 'n' value of 0.02.

Table 6-1: Manning's n values applied in 2D domain

Location	Value
Roads	0.02
Grass	0.08
Trees	0.12
Buildings	3.0

The distribution of roughness values used in the 2D domain can be seen in Figure 6-5 below. Within the TUFLOW 2D domain, all areas not identified as roads, buildings or trees were defined as grass and assigned a Manning's 'n' value of 0.08.

PUNCH consulting engineers
Old Connaught Tributary, Old Connaught Avenue, Bray
Flood Risk Assessment

Figure 6-5: Tuflow 2D Domain Surface Roughness

6.4 1D / 2D Model Linkage

The 1D and 2D models were constructed separately and were then linked and run as a single model within the Flood Modeller software. This 1D-2D Flood Modeller-TUFLOW linked model approach is considered industry standard. The model linkage is configured within the 2D domain with water permitted to flow from the 1D model to the 2D model and vice-versa using model interface or HX lines. This interaction allows water to move between 1D and 2D domains, enabling realistic representation of river flooding onto the floodplain.

The elevation of the DEM in the 2D model must be greater than the bed level in the 1D model at the HX lines. These lines are configured such that when the water level in the 1D model exceeds the ground level in the 2D model, these waters enter the 2D model and become overland flows. Likewise, when flows from the 2D model are higher than in the 1D model, these overland flows will re-enter the 1D model and be computed by the 1D solver (Flood Modeller).

The HX lines are located along the left and right banks of the watercourse as shown in Figure 6-6.

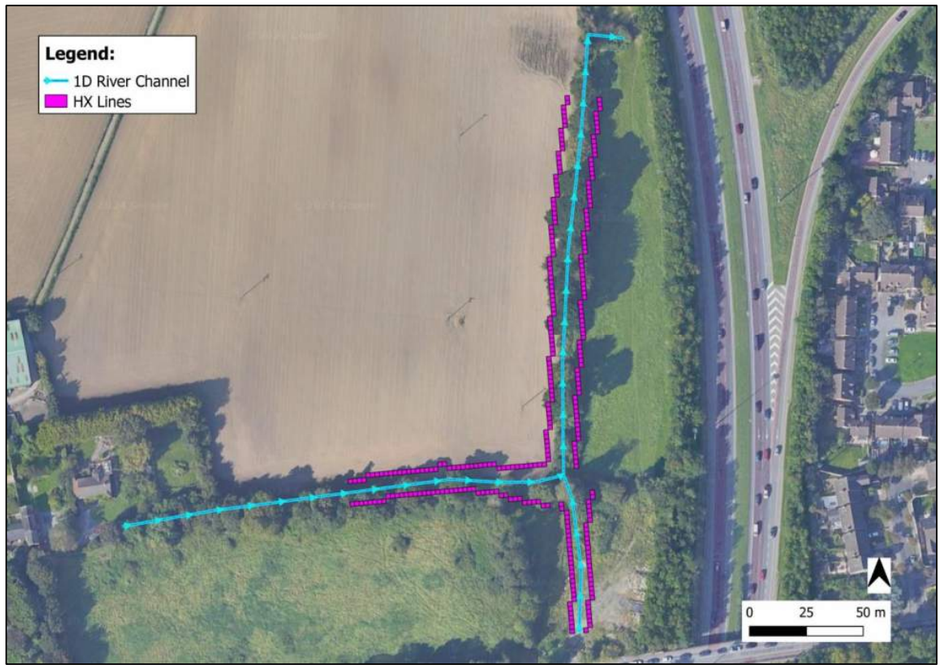


Figure 6-6: Location of 1D / 2D HX Lines

Any water leaving the 1D Urban network has been added to the 2D Domain using the source-area function. Overflows from the 1D urban network can spread across the floodplain and return to the 1D river model, effectively replicating real-world interactions between the pipe network and the open channel.

Flood extent and depth maps produced using the 1D/2D linked model are presented in Section 6.5 and Appendix E.

6.5 Flood Mapping

Flood extent mapping, depth mapping and long-sections has been produced for the Current Scenario, MRFS and HEFS. The Current Scenario flood extent, depth and 1D Urban long-section results are presented below with 1D River long-sections and all the future scenario results included in Appendix E.

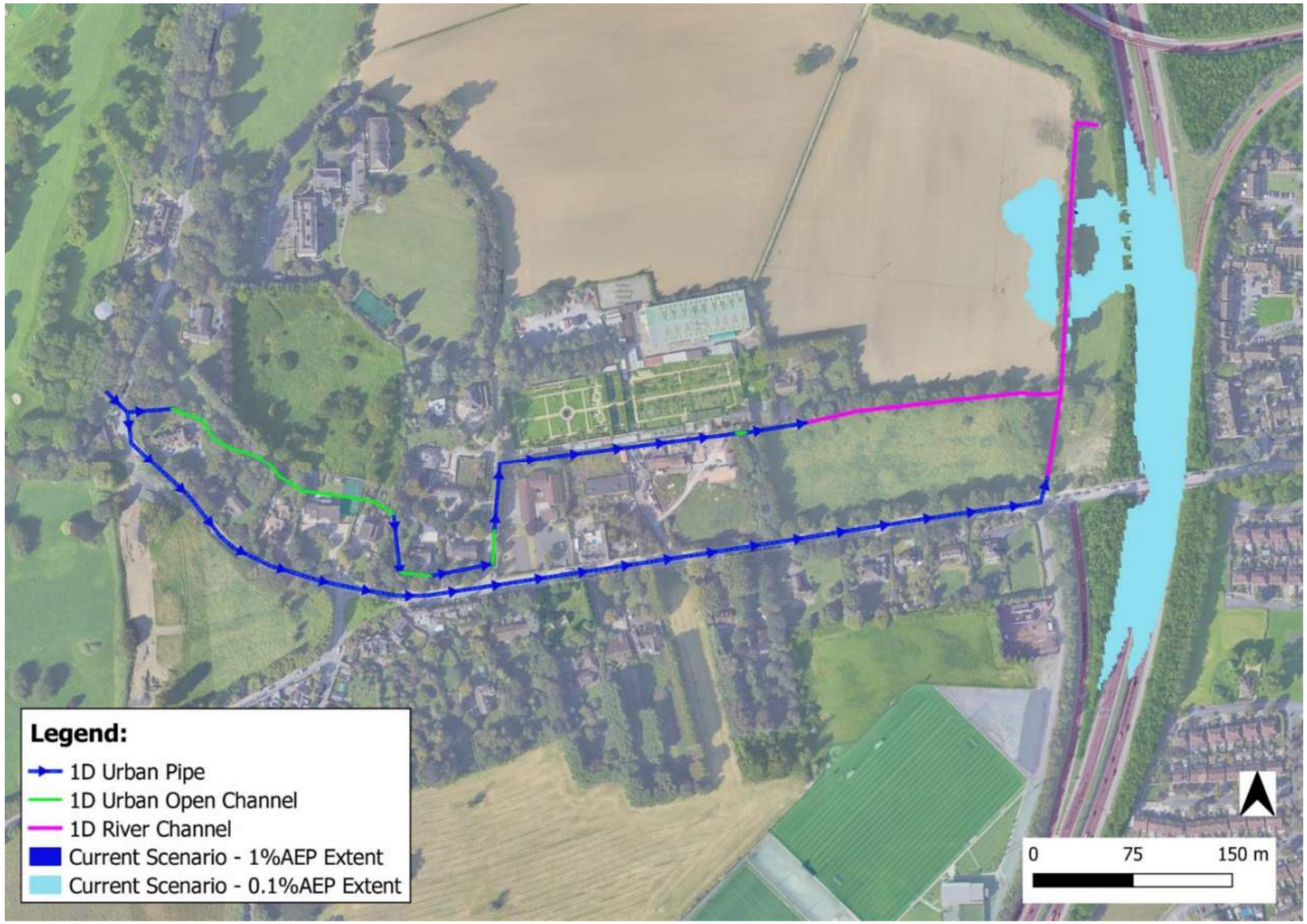


Figure 6-7: Current Scenario 1%AEP and 0.1%AEP Flood Extents

Figure 6-8: Current Scenario 0.1%AEP Flood Depth

To better understand the long section results, the following location key has been produced:

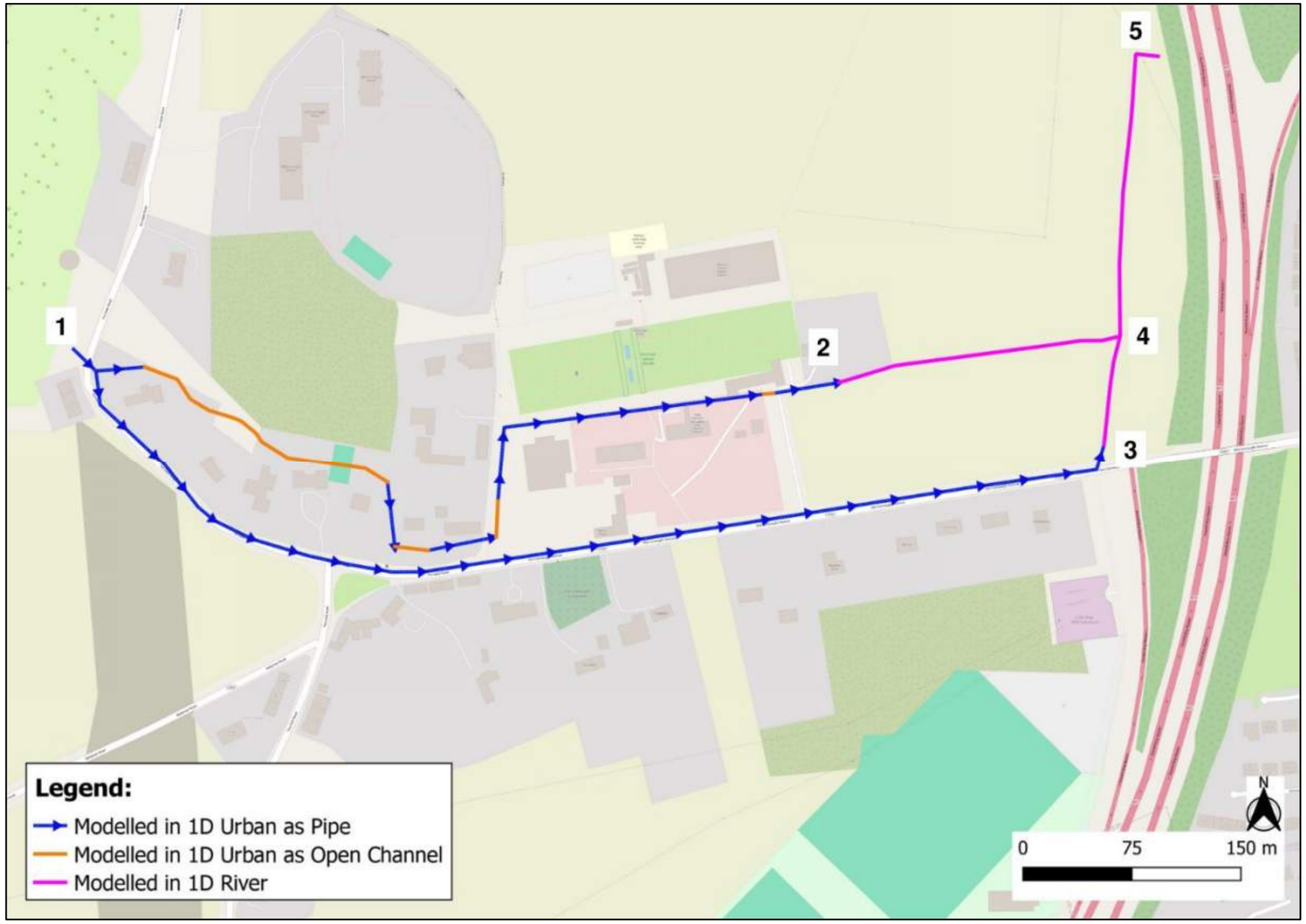


Figure 6-9: Long Section Key

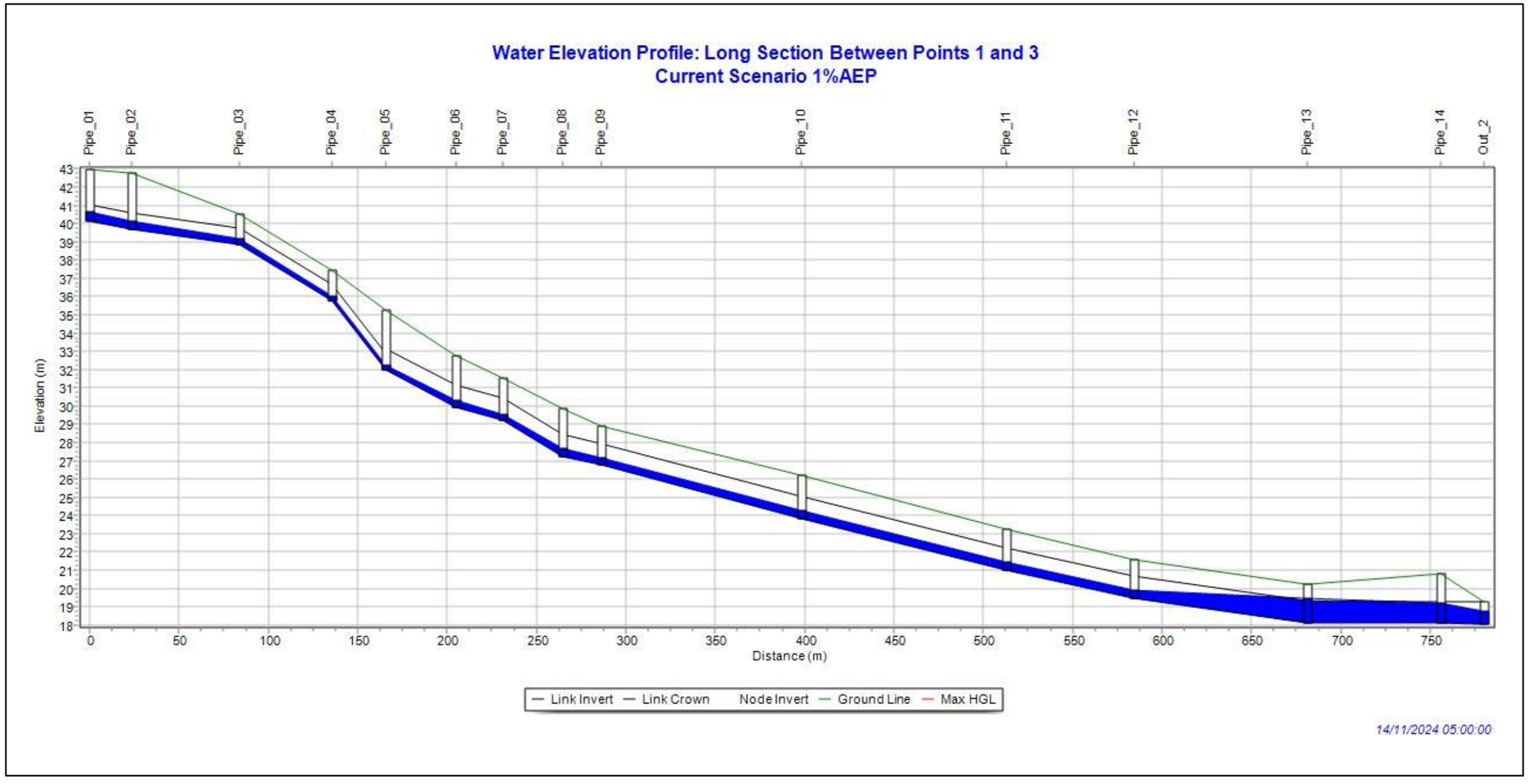


Figure 6-10: Peak Water Level Long Section Between Points 1 and 3 – Current Scenario 1%AEP Event

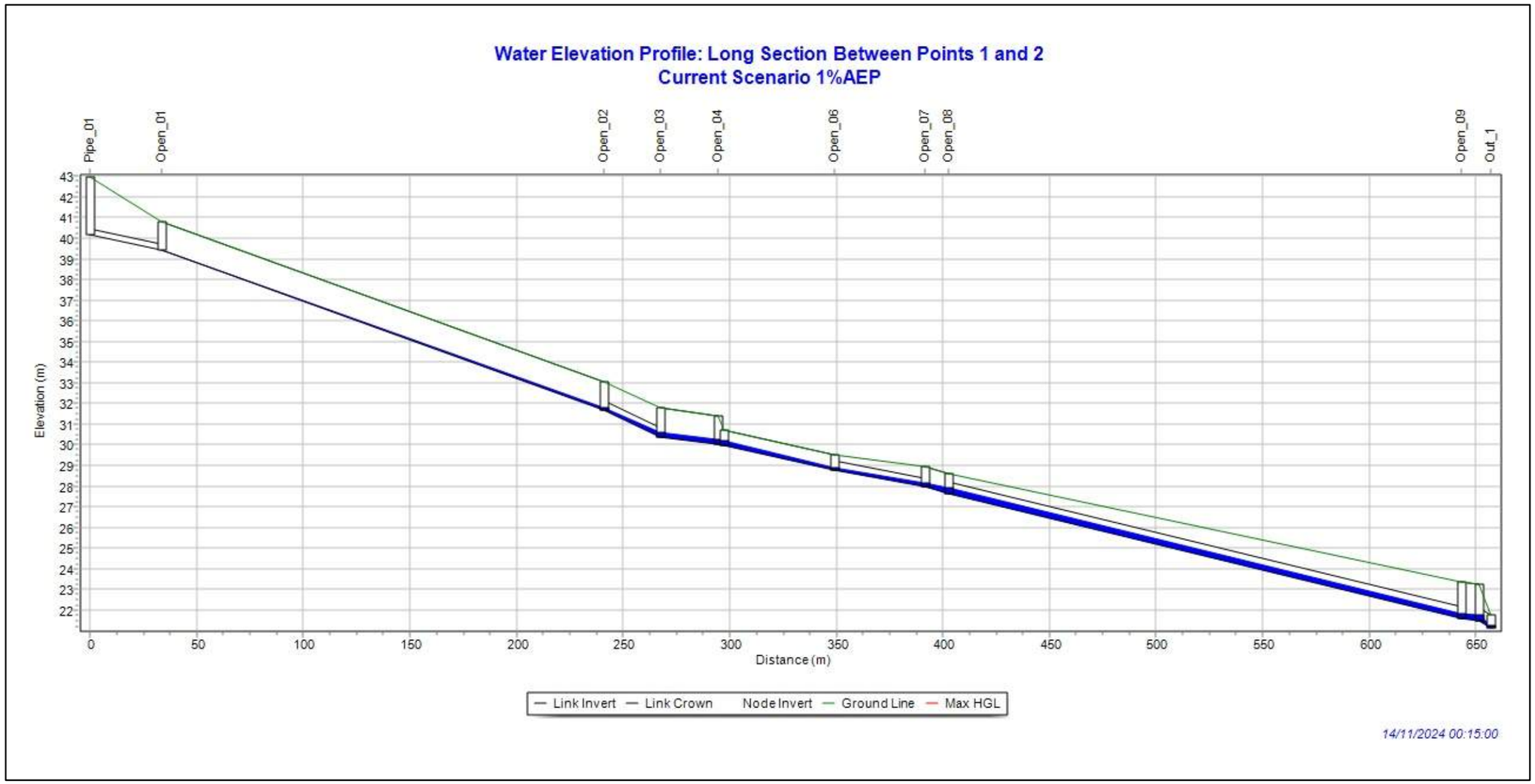


Figure 6-11: Peak Water Level Long Section Between Points 1 and 2 – Current Scenario 1%AEP Event

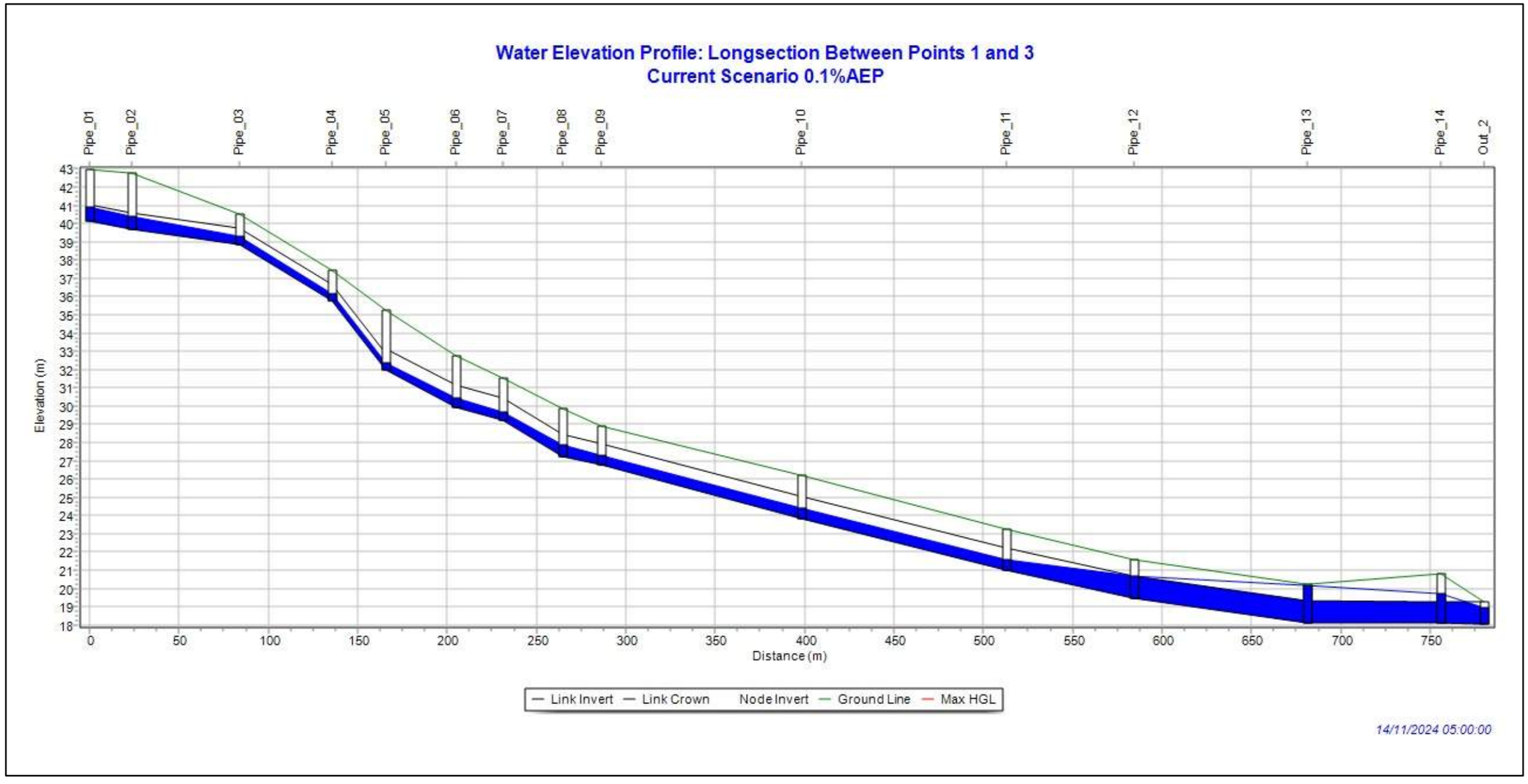


Figure 6-12: Peak Water Level Long Section Between Points 1 and 3 – Current Scenario 0.1%AEP Event

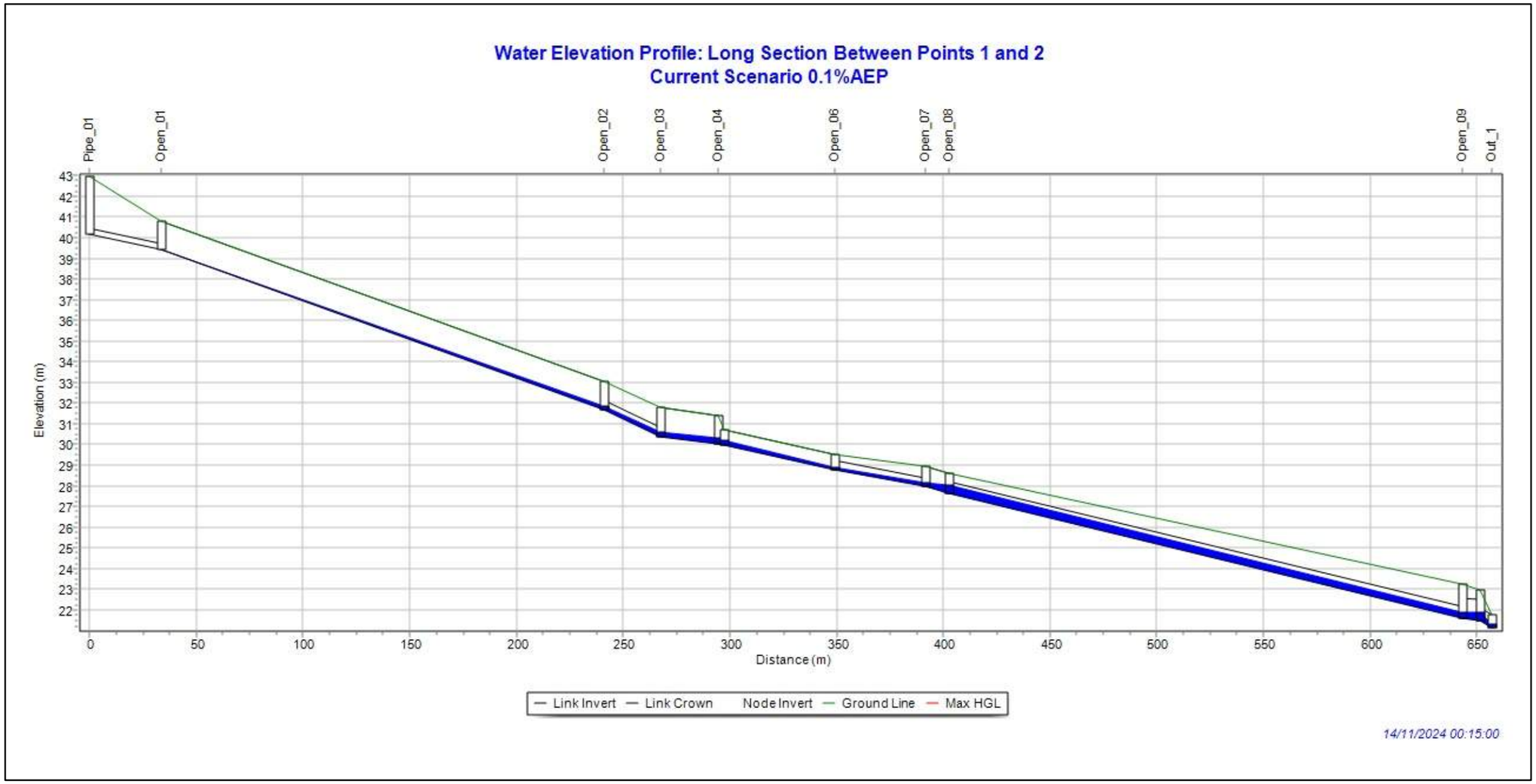


Figure 6-13: Peak Water Level Long Section Between Points 1 and 2 – Current Scenario 0.1%AEP Event

6.6 Flood Mapping – Discussion

6.6.1 Pipe Network

Examination of the Current Scenario 0.1%AEP peak water level long section in Figure 6-12 reveals that Manhole 13 is at risk of flooding, with the water level approximately 35mm below ground level during this event. The pipes entering Manholes 12 and 14 are also surcharged during this event.

In the 1%AEP event the pipes are surcharged at Manhole 13 suggesting that this is a vulnerable point in the drainage network.

6.6.2 Overland Flow Paths

Figure 6-14 below is a snapshot from the 0.1%AEP MRFS event and includes flow direction arrows to illustrate the overland flow paths. In this event, floodwaters spill from a manhole on Old Connaught Avenue (Point A) and flow northwards before re-entering the open channel (Point B). Water also overtops both banks of the open channel at Point C, and a large amount of water flows eastward onto the M11 motorway and then southwards (Point D). The motorway lies at a lower elevation than the upstream lands, causing water that flows onto the road to pond, as it cannot return to the open channel.

Figure 6-14: 0.1%AEP MRFS - Overland Flow Path Directions

Floodwaters from the 1D Urban model overflow through a single manhole (Manhole 13), identified as SWMH0021231 in the Uisce Eireann's drainage records. Its location is shown in Figure 6-15. Flooding occurs at this manhole in the 01%AEP MRFS and HEFS events.

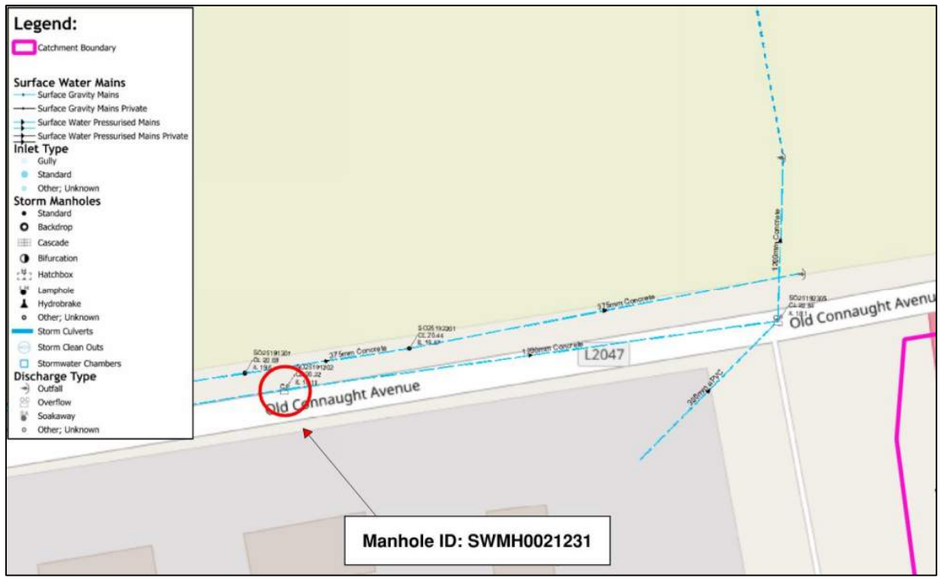


Figure 6-15: Location of Spill Manhole

6.7 Sensitivity Analysis

The sensitivity analysis evaluates the impact of key input parameter variations on model results to ensure that the hydraulic model is robust and to identify critical factors influencing flood risk. Both the 1%AEP and 0.1%AEP flood are taken as critical events for the purposes of this analysis.

The following parameters were selected for sensitivity analysis based on their potential influence on model performance:

- Mannings Roughness Coefficient (n)
- Inflow Hydrographs

6.7.1 Manning's Roughness Coefficient (n)

The baseline Manning's n roughness coefficients used in the hydraulic models are n=0.013 for the stormwater pipe running along Old Connaught Avenue and n=0.06 for the open channel 1D river sections.

6.7.1.1 Pipe along Old Connaught Avenue

The Manning's n roughness value assigned to the stormwater pipe along Old Connaught Avenue was adjusted by ±20% and the resulting changes in water levels within the pipes are presented in Figure 6-2.

Table 6-2: Variation in Mannings n in Stormwater Pipe Along Old Connaught Avenue

Event	Manning's n	Change in Water Level	Comment
1%AEP	0.011	-20mm to -50mm	No Flooding
1%AEP	0.015	+10mm to +50mm	No Flooding
0.1%AEP	0.011	-10mm to -320mm	No Flooding
0.1%AEP	0.015	+20mm to +270mm	Some flooding on Old Connaught Avenue from Manhole 13

Increasing the Manning's n from 0.013 to 0.015 for the 0.1%AEP event resulted in a small amount of shallow flooding along Old Connaught Avenue as shown in Figure 6-16. Flood depths at this location are between 10mm and 95mm.

PUNCH consulting engineers
Old Connaught Tributary, Old Connaught Avenue, Bray
Flood Risk Assessment

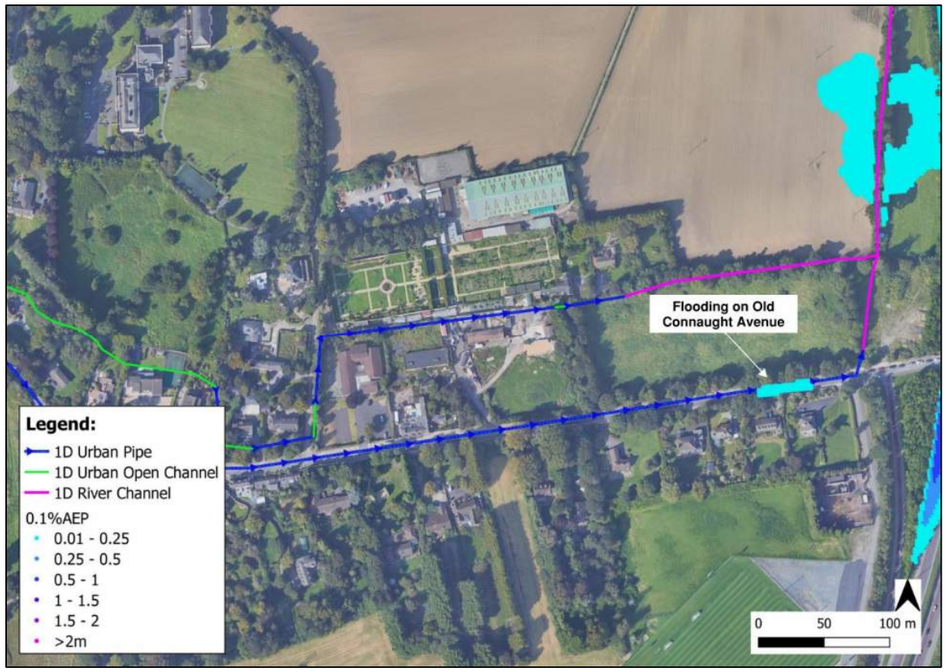


Figure 6-16: Sensitivity Analysis Flood Extent- Manning's n Increased in Pipe Along Old Connaught Avenue

6.7.1.2 Open River Channel

The Manning's n roughness value assigned to the open channel 1D river cross-sections was adjusted by ±20% and the resulting changes in water levels within the channel and the flooded areas are presented in Table 6-3. The changes in flood extents are presented in Figure 6-17 and Figure 6-18.

Figure 6-17 and Figure 6-18 present the flood extents resulting from the variation of Manning's n in the 1D river channel.

Table 6-3: Results from Variation in Mannings n Roughness in Open Channel 1D River Sections

Event	Manning's n	Change in Water Level	Flooded Area (m^2)
1%AEP	0.048	-10mm to -100mm	0
1%AEP	0.06	-	12
1%AEP	0.072	+20mm to +80mm	2,844
0.1%AEP	0.048	-20mm to -120mm	14,464
0.1%AEP	0.06	-	20,864
0.1%AEP	0.072	+10mm to +80mm	24,936

Figure 6-17: 1%AEP Flood Extents - Variation in Mannings n Roughness in 1D River Model

Figure 6-18: 0.1%AEP Flood Extents - Variation in Mannings n Roughness in 1D River Model

6.7.1.3 Discussion

The results of this analysis indicate that the model is moderately sensitive to a variation in Manning's n roughness coefficient, with localised impacts on water levels and flood extents.

Regarding the stormwater pipe along Old Connaught Avenue, changes in water levels were predominantly contained within the pipe network. However, during the 0.1% AEP event, an increase in Manning's n led to localised flooding along Old Connaught Avenue.

Variations in Manning's n within the 1D River cross-sections impacted the water level in the channel and, when increased, exacerbated flooding in both the 1%AEP and 0.1%AEP events.

6.7.2 Inflow Hydrographs

The MRFS and HEFS scenarios provide an inflow hydrograph sensitivity analysis. The MRFS includes a +20% increase in peak inflows while the HEFS incorporates a 30% increase in flow. The 1%AEP Current Scenario, MRFS and HEFS flood extents are presented in Figure 6-19 below and the 0.1%AEP Current Scenario, MRFS and HEFS flood extents are presented in Figure 6-20.

Figure 6-19: 1%AEP Flood Extents - Inflow Variation

Figure 6-20: 0.1%AEP Flood Extents - Inflow Variation

6.7.2.1 Discussion

The results from this analysis indicate that both the 1%AEP and 0.1%AEP events are highly sensitive to increases in flow. While the 1%AEP Current Scenario event does not result in any overland flooding, the 1%AEP MRFS and HEFS events cause flooding in the downstream area of the 2D model domain.

Similarly, the 0.1%AEP Current Scenario event does not cause flooding along Old Connaught Avenue, but the 0.1%AEP MRFS and HEFS both result in flooding on this road.

Peak discharge variations significantly affect flood extents, emphasising the importance of accurate hydrological data.

PUNCH consulting engineers
Old Connaught Tributary, Old Connaught Avenue, Bray
Flood Risk Assessment

6.7.3 Sensitivity Analysis Conclusion

In conclusion, the sensitivity analysis highlights the influence of Manning's n roughness and peak inflows on the hydraulic model's performance and predicted outcomes.

Variations in Manning's n moderately affect water levels and flood extents in the hydraulic models. In general, an increase or decrease in roughness exacerbates or reduces predicted flood extents. However, an increase in pipe roughness introduces a new flood risk along Old Connaught Avenue in the 0.1%AEP event. This highlights the vulnerability of Manhole 13 along Old Connaught Avenue to flooding during extreme events.

The roughness coefficients adopted in the hydraulic model are considered appropriate given the pipe / channel arrangements and are in line with industry standards.

The variation in peak inflows demonstrate a significant impact on flood extents, particularly during extreme events, underscoring the model's sensitivity to inflow variations. An increase in flow during the 1%AEP event introduces overland flooding on the M11 in the 2D model domain. Similarly, an increase in flow during the 0.1%AEP event causes along Old Connaught Avenue, again highlighting the vulnerability of Manhole 13 to flooding during extreme events.

7 Review of CFRAMS Hydraulic Model

7.1 1D Model Differences

PUNCH were furnished with the CFRAMS hydraulic model for the Old Connaught and Wilford watercourses from the OPW via DLRCC. This model was constructed in 2016 using the Danish Hydraulic Institute's (DHI) MIKE software which is a licensed modelling tool. Without a license for this software, we were restricted to interrogating the model using Mike View, a post-processing and visualisation tool. The CFRAMS hydraulic model layout is shown in Figure 7-1 below.

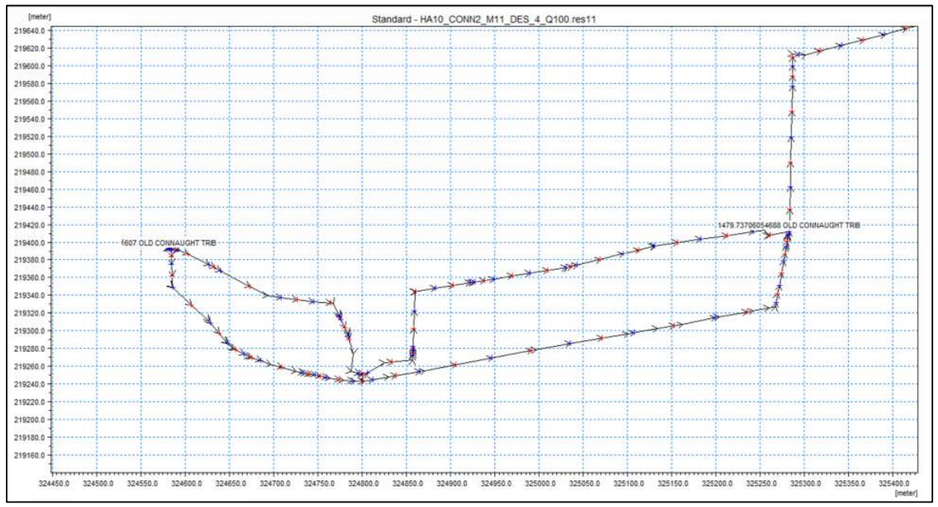


Figure 7-1: Plan View of CFRAMS Hydraulic Model in Mike View

The following key points were identified from a review of the CFRAMS model using Mike View:

- The CFRAMS model layout appears to be the same as the model produced for this FRA. However, the CFRAMS model extends downstream of the M11 and incorporates the Wilford Stream.
- The 300mm diameter pipe shown at location A in Figure 7-2 is not included in the CFRAMS model. This pipe acts as a throttle and has a significant impact on the magnitude of flow entering this leg of the watercourse in extreme events. This 300mm diameter pipe is shown in the Uisce Eireann drainage records and its presence confirmed on site by DLRCC and has been included in the FRA model.

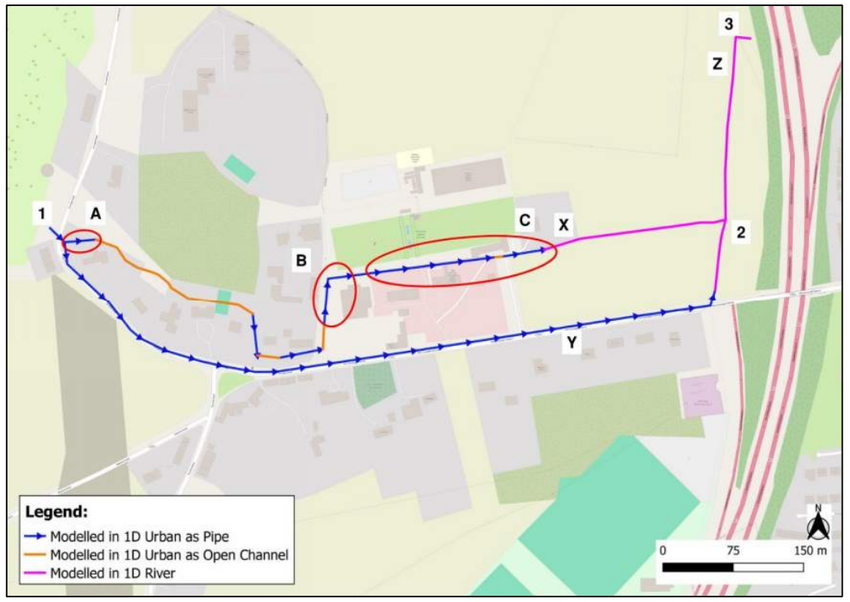


Figure 7-2: Illustration Identifying Differences Between the CFRAMS and FRA Models

- The 600mm pipe shown at location B in Figure 7-2 has been included in the CFRAMS model as a 450mm diameter pipe and thus reduces the capacity of this section of the watercourse. DLRCC have confirmed that his pipe is 600mm in diameter and it has been included in the FRA model as such.
- The length of pipe shown at location C in Figure 7-2 has been included in the CFRAMS model as a continuous open channel. This open channel has been linked to the 2D domain in the CFRAMS model and provides an opportunity for flooding at this location. According to Uisce Éireann drainage records, this section of the watercourse is culverted and has been included in the FRA model as such.
- Lateral inflows have been applied uniformly along both branches of the CFRAMS 1D model between points 1 and 3. This approach does not account of point inflows, which may lead to under or overestimation of flow at various locations within the system. A comparison has been made between the flows in the CFRAMS model and those in the model developed for this FRA at points X, Y, and Z (Figure 7-2) for 1% and 0.1% AEP Current Scenario events, as presented in Table 7-1 below.

Table 7-1: Flow Comparison Between CFRAMS and FRA Models

Current Scenario Event	Point	CFRAMS (m^3/s)	FRA (m^3/s)
1%AEP	X	0.63	0.31
	Y	1.40	1.53
	Z	2.22	2.20
0.1%AEP	X	0.70	0.41
	Y	2.44	2.75
	Z	2.37	2.80

The flow results in Table 7-1 can be analysed as follows:

- The lower flow values at Point X in the FRA model for both the 1% and 0.1%AEP events are the result of the 300mm upstream throttle pipe and the distribution of inflows into the model.
- The similarity of flow values for Points Y and Z in the 1%AEP event demonstrates that the overall flow in both models is the same.
- The lower flows in the CFRAMS model at Points Y and Z in the 0.1%AEP event is indicative of the increased overland flow in the 2D domain.

7.2 Additional Model Differences

Recently procured topographical survey data for the greenfield area between Points X and Y in Figure 7-2 was used in the Tuflow DEM. The topographic survey data was compared with the LiDAR data utilised in the CFRAMS, and the ground level differences are illustrated graphically in Figure 6.3. In general, the levels vary between approximately +0.5m and -0.3m with the positive values showing where the topographic data is higher than the LiDAR data.

PUNCH consulting engineers
Old Connaught Tributary, Old Connaught Avenue, Bray
Flood Risk Assessment

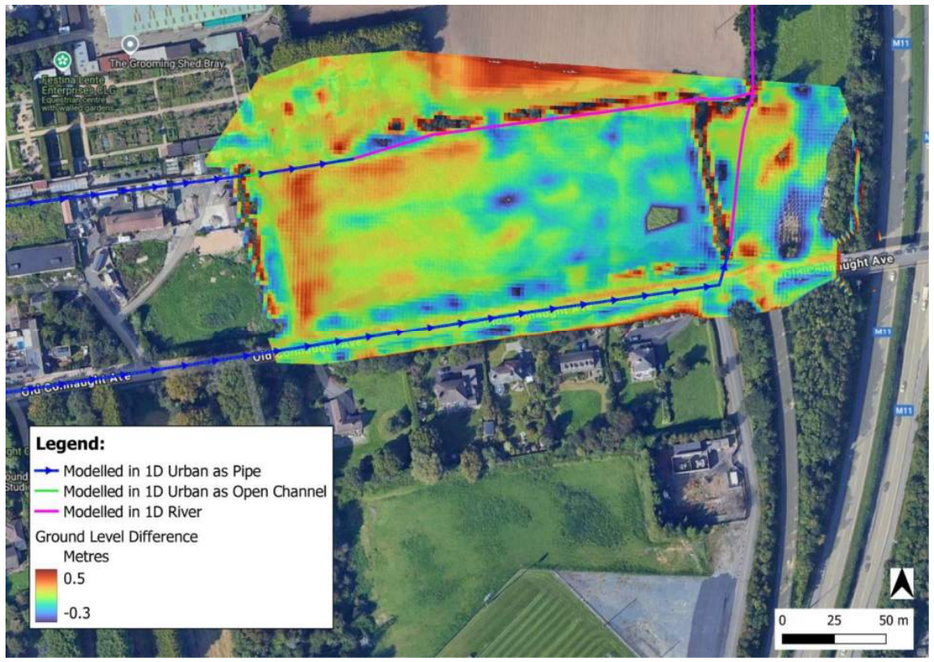


Figure 7-3: Topographic Survey / DEM – Level Difference

This topographical survey data was also used to describe the 1D River channel model where available.

7.3 Flood Map Comparison

The flood extents developed from the FRA model are compared against the CFRAMS flood extents in Figure 7-4 and Figure 7-5 below.

It can be seen from Figure 7-4 that the FRA model produces a very small amount of flooding (circa $12m^2$) during the 1%AEP event. This differs significantly from the 1%AEP CFRAMS flood extents which are shown on both sides of Old Connaught Avenue and on the M11 motorway.

Examination of Figure 7-5 and the CFRAMS 0.1%AEP hydraulic model long sections from Mike View suggest that the majority of the overland flow shown on the CFRAMS flood mapping emanates from the northern leg of the Old Connaught Tributary (points 1 to 2 in Figure 7-2). This flow is retained within the 1D elements of the FRA model and does not result in overland flow.

In Summary, the flood extents produced by the FRA model are significantly different from the CFRAMS flood extent mapping around Old Connaught Avenue in both the 1%AEP and the 0.1%AEP events. The 0.1%AEP flood extent on the M11 motorway produced using the FRA model is similar, but less extensive than the CFRAMS flood extent.

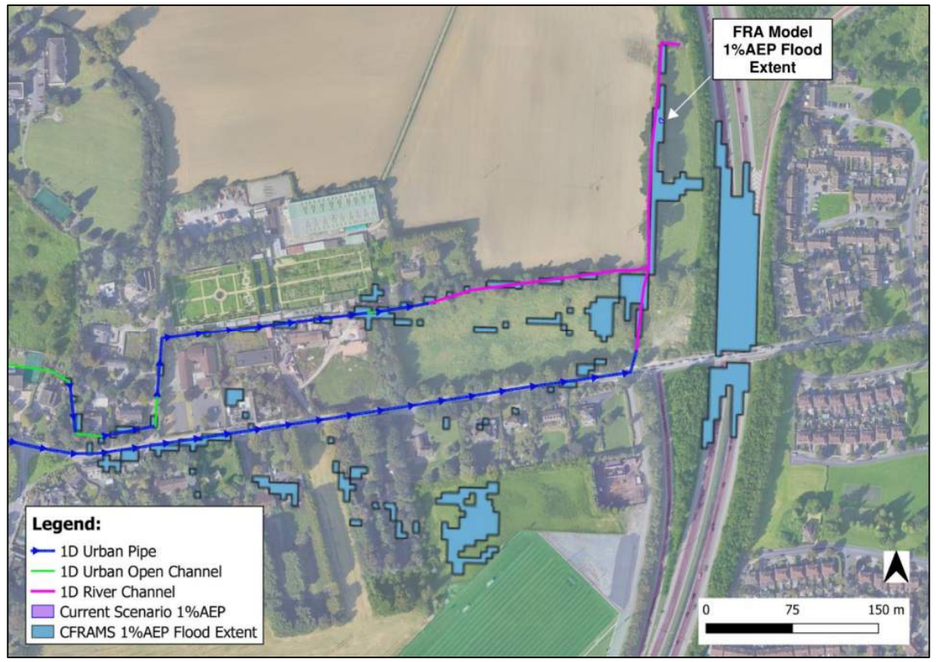


Figure 7-4: 1% Flood Extent Comparison

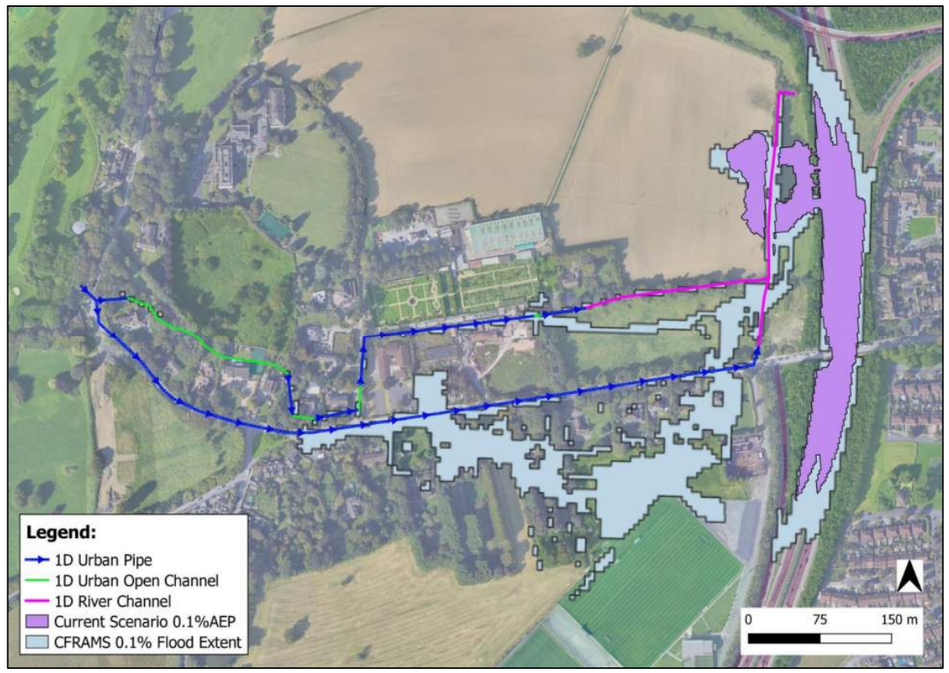


Figure 7-5: 0.1% Flood Extent Comparison

8 Conclusions

PUNCH Consulting Engineers were appointed by Dun Laoghaire Rathdown County Council (DLRCC) to carry out a Flood Risk Assessment (FRA) for the Old Connaught Tributary Catchment upstream of the M11 Motorway, north-west of Bray, Co. Wicklow.

This Flood Risk Assessment has been carried out in accordance with *"The Planning System & Flood Risk Management Guidelines"* published by the Department of the Environment, Heritage and Local Government in November 2009 and the DLR CDP 2022-2028.

The purpose of this assessment is to reanalyse the predicted flood extents within the catchment and to verify the accuracy of the CFRAMS flood extent mapping. This was done through a comprehensive analysis encompassing a desktop study, hydrological analysis, hydraulic model development, scenario-based simulations and flood mapping.

The desktop study identified critical data sources, including historical flood records, survey data, and drainage infrastructure information, providing a robust foundation for the analysis.

A hydrological assessment was undertaken and design flows developed based on the CFRAMS check flows for the Old Connaught Tributary model. The Old Connaught Tributary catchment was subdivided into smaller sub-catchments based on ground topography and the existing surface water drainage system. Future scenario flows were developed using OPW and DLRCC guidance on the expected impact of climate change.

Hydraulic models linking 1D and 2D components were developed using Flood Modeller and Tuflow, incorporating the inflows derived from the hydrological assessment. Flood extent and depth maps as well as model long-sections were produced for current and future scenario events.

The flood mapping analysis showed that, under the current scenario 1% AEP event, floodwaters are largely confined within the extents of the Old Connaught Tributary. During the 0.1% AEP event, however, floodwaters exceed the channel capacity and spill onto the M11. Manhole 13 on Old Connaught Avenue is particularly vulnerable to flooding, with the incoming pipes surcharged during the current scenario 1%AEP event and floodwater coming within 35mm of the ground level during the current scenario 0.1%AEP event.

A hydraulic model sensitivity analysis was undertaken to ascertain the impact of key input parameter variations on model results. Manning's n roughness coefficients and peak inflow were chosen for this assessment. The results indicated that the models are moderately sensitive to a variation in Manning's n roughness and highly sensitive to an increase in peak flow.

A comprehensive comparison was carried out between the hydraulic model produced for this FRA and the CFRAMS hydraulic model. The keys differences are the inclusion of a 300mm diameter throttle pipe at the upstream bifurcation, the upsizing of a culvert from 450mm to 600mm diameter and the redistribution of inflows in the FRA model.

The flood maps produced for this FRA differ significantly from the CFRAMS flood extent mapping. OPW's Flood Mapping Review Programme have been asked to review this FRA document with the view to updating the CFRAMS mapping as appropriate.

Appendix A Site Visit Images

Image 1: 1200mm diameter culvert upstream Ferndale Road

Image 2: Bifurcation Manhole

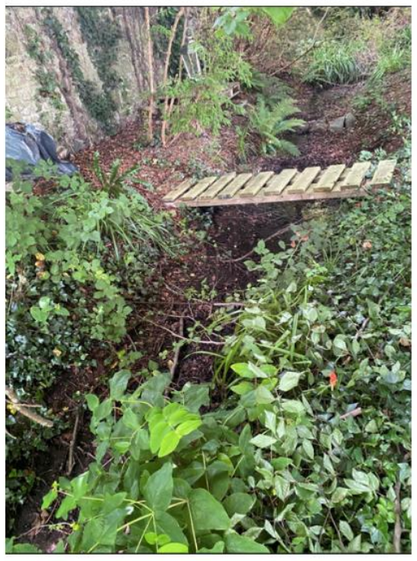


Image 3: Open channel through private garden

Image 4: Open channel at entrance to Festina Lente

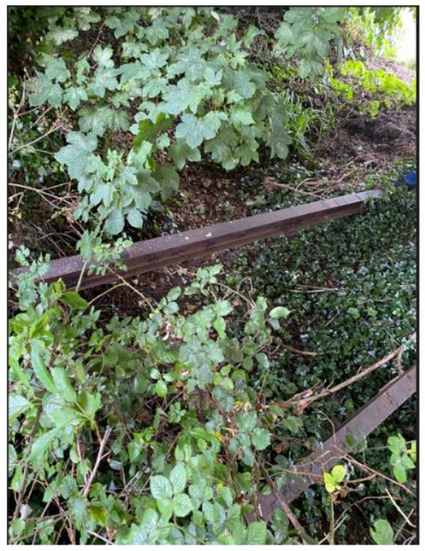


Image 5: Section of open channel

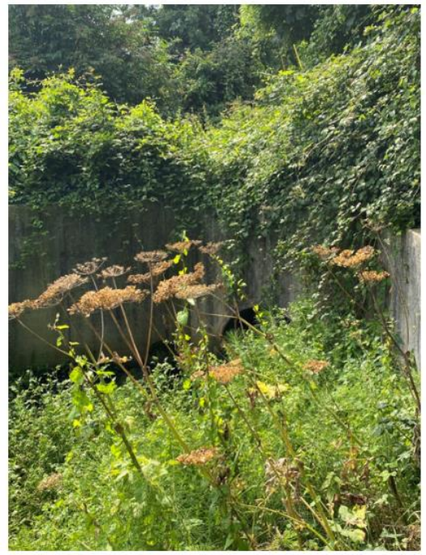
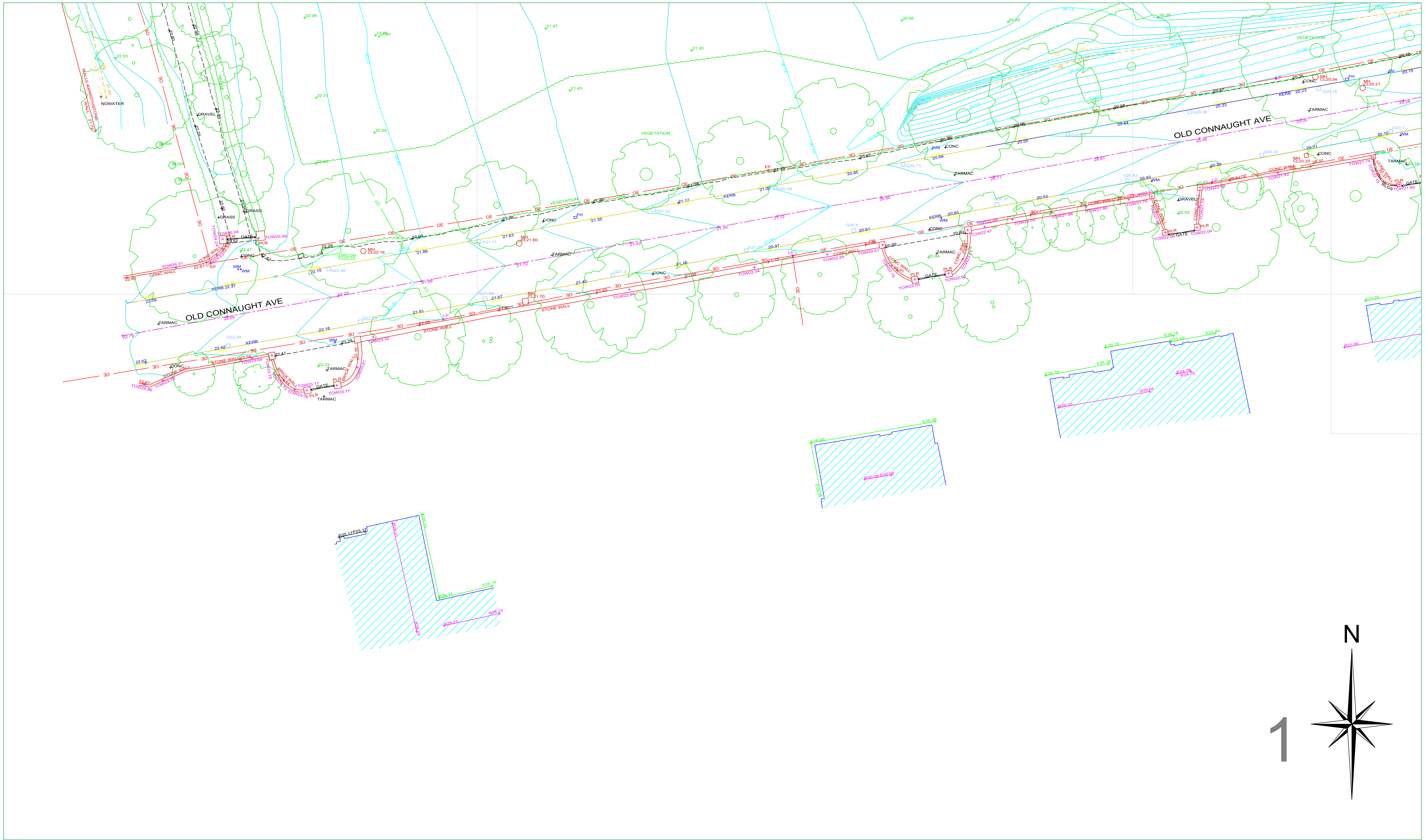


Image 6: Entrance to culvert under M11

Appendix B Topographical Survey Data



APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

RURAL/NATURAL FEATURES :

- BUSH
- SAPLING
- TREE
- HEDGE
- TROUGH — TR
- CATTLE GRID — GRID

LINEWORK:

- EMBANKEMENT TOP — 101.50
- DRAIN — 101.50
- BREAKLINE — 101.50
- BUILDING — 101.50
- KERB BOTTOM — 101.50
- WALL — 101.50
- PATH/CHANGE SURFACE — 101.50
- O/HEAD ELECTRICITY — OE
- O/HEAD TELECOM — OT

STREET FURNITURE :

BOLLARDS	BD
BORE HOLE	BH
BUS STOP	BS
CRASH BARRIER	CB
ELECTRICITY POLE	EP
EARTHING ROD	ER
GATE	
GROUND LIGHT	LT
ILLUMINATED BOLLARD	BOL
LAMP POST	LP
MARKER POST	MKR
POST	POST
POST BOX	POST BOX
ROADSIGN	RS · RS
SIGN POST	SIGN
TELEPHONE BOX	TB
TELEPHONE POLE	TP
TRAFFIC LIGHT	TL
TRIAL PIT	TPIT

SERVICES :

AIR VALVE	AV
ARMSTRONG JUNCTION	AJ
CABLE TV IC	CATV
COVER LEVEL	CL
EIRCOM COVER	EIRCOM
EIRCOM JUNCTION BOX	EIRCOM BOX
ELECTRICAL CABLE PIT	ECP
ESAT COVER	ESAT
ESB COVER	ESB
ESB JUNCTION BOX	ESB BOX
FIRE HYDRANT	FH
GAS VALVE	GV
GULLY	G
INSPECTION COVER	IC
MANHOLE	MH
SEPTIC TANK	SEPTIC
SLUICE VALVE	SV
STOPCOCK	ST

SERVICES :

SERVICE BOX (UNKNOWN)	BOX
TRAFFIC COVER	TLIC
VENT	VENT
WATER METER	WM
UNABLE TO LIFT	UTO

LEVELS :

BED LEVEL	BED101.50
EAVE LEVEL	E101.50
FLOOR LEVEL	FL101.50
INVERT LEVEL	IL101.50
ROAD LEVEL	101.50
RIDGE LEVEL	R101.50
SOFFIT LEVEL	SL101.50
SPOT LEVEL	101.50
TOP OF FENCE LEVEL	TOF101.50
TOP OF WALL LEVEL	TOW101.50
WATER LEVEL	WL101.50
SURVEY CONTROL STATION	

SHEET LAYOUT :

PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

Dun Laoghaire Rathdown County Council

PROJECT:

Old Connaught Road

GRID SYSTEM: Irish Transverse Mercator
DATUM: Malin Head (OSGM15)
NOTES: Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	N/A	Original Drawing

SCALE : 1/200 A1

DATE : 11/10/2023

DRG No: 5972

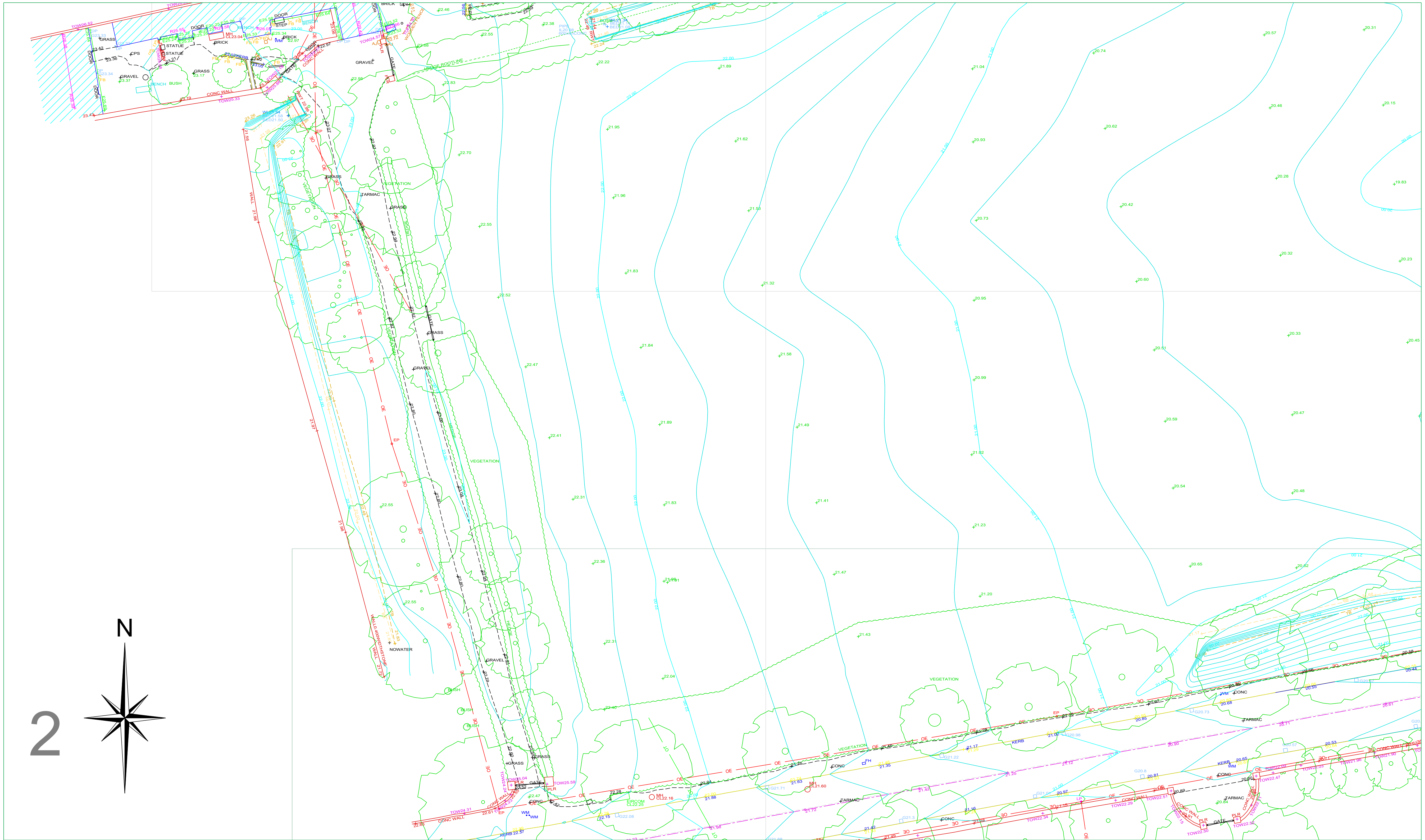
DESCRIPTION : 2D Topographical

SURVEYED BY : F.K.&F.M.

SHEET: 1 of 6

PROCESSED BY : F.S.

CHECKED BY : A.B.



RURAL/NATURAL FEATURES :

- BUSH
- SAPLING
- TREE
- HEDGE
- TROUGH — TR
- CATTLE GRID — GRID

LINEWORK:

- EMBANKEMENT TOP — 101.50
- DRAIN — 101.50
- BREAKLINE — 101.50
- BUILDING — 101.50
- KERB BOTTOM — 101.50
- WALL — 101.50
- PATH/CHANGE SURFACE — 101.50
- O/HEAD ELECTRICITY — OE
- O/HEAD TELECOM — OT

STREET FURNITURE :

- BOLLARDS — BD
- BORE HOLE — BH
- BUS STOP — BS
- CRASH BARRIER — CB
- ELECTRICITY POLE — EP
- EARTHING ROD — ER
- GATE
- GROUND LIGHT — LT
- ILLUMINATED BOLLARD — BOL
- LAMP POST — LP
- MARKER POST — MKR
- POST — POST
- POST BOX — POST BOX
- ROADSIGN — RS RS
- SIGN POST — SIGN
- TELEPHONE BOX — TB
- TELEPHONE POLE — TP
- TRAFFIC LIGHT — TL
- TRIAL PIT — TPIT

SERVICES :

- AIR VALVE — AV
- ARMSTRONG JUNCTION — AJ
- CABLE TV IC — CATV
- COVER LEVEL — CL
- EIRCOM COVER — EIRCOM
- EIRCOM JUNCTION BOX — EIRCOM BOX
- ELECTRICAL CABLE PIT — ECP
- ESAT COVER — ESAT
- ESB COVER — ESB
- ESB JUNCTION BOX — ESB BOX
- FIRE HYDRANT — FH
- GAS VALVE — GV
- GULLY — G
- INSPECTION COVER — IC
- MANHOLE — MH
- SEPTIC TANK — SEPTIC
- SLUICE VALVE — SV
- STOPCOCK — ST

SERVICES :

- SERVICE BOX (UNKNOWN) — BOX
- TRAFFIC COVER — TLIC
- VENT — VENT
- WATER METER — WM
- UNABLE TO LIFT — UTO

LEVELS :

- BED LEVEL — BED101.50
- EAVE LEVEL — E101.50
- FLOOR LEVEL — FL101.50
- INVERT LEVEL — IL101.50
- ROAD LEVEL — 101.50
- RIDGE LEVEL — R101.50
- SOFFIT LEVEL — SL101.50
- SPOT LEVEL — 101.50
- TOP OF FENCE LEVEL — TOF101.50
- TOP OF WALL LEVEL — TOW101.50
- WATER LEVEL — WL101.50
- SURVEY CONTROL STATION

SHEET LAYOUT :

APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

Dun Laoghaire Rathdown County Council

PROJECT:

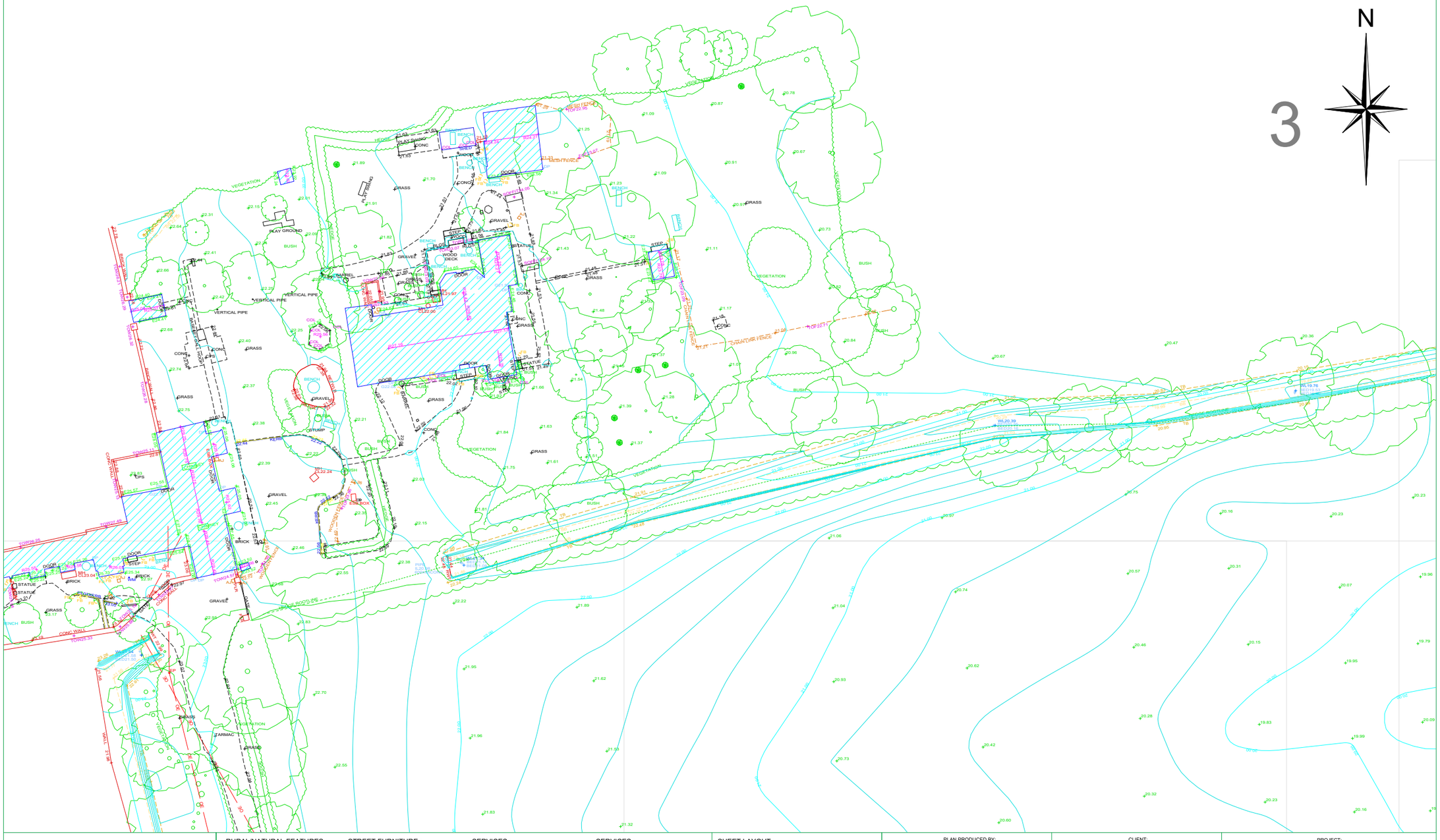
Old Connaught Road

GRID SYSTEM:	Irish Transverse Mercator
DATUM:	Malin Head (OSGM15)
NOTES:	Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	N/A	Original Drawing

SCALE :	1/200 A1	DATE :	11/10/2023
DRG No:	5972	DESCRIPTION :	2D Topographical
		SURVEYED BY :	F.K.&F.M.
SHEET:	2 of 6	PROCESSED BY :	F.S.
		CHECKED BY :	A.B.



APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

RURAL/NATURAL FEATURES :

BUSH
SAPLING
TREE
HEDGE
TROUGH TR
CATTLE GRID GRID

LINEWORK:

EMBANKEMENT TOP 101.50
DRAIN 101.50
BREAKLINE 101.50
BUILDING 101.50
KERB BOTTOM 101.50
WALL 101.50
PATH/CHANGE SURFACE 101.50
O/HEAD ELECTRICITY
O/HEAD TELECOM

STREET FURNITURE :

BOLLARDS	BD
BORE HOLE	BH
BUS STOP	BS
CRASH BARRIER	CB
ELECTRICITY POLE	EP
EARTHING ROD	ER
GATE	
GROUND LIGHT	LT
ILLUMINATED BOLLARD	BOL
LAMP POST	LP
MARKER POST	MKR
POST	POST
POST BOX	POST BOX
ROADSIGN	RS
SIGN POST	SIGN
TELEPHONE BOX	TB
TELEPHONE POLE	TP
TRAFFIC LIGHT	TL
TRIAL PIT	TPIT

SERVICES :

AIR VALVE	AV
ARMSTRONG JUNCTION	AJ
CABLE TV IC	CATV
COVER LEVEL	CL
EIRCOM COVER	EIRCOM
EIRCOM JUNCTION BOX	EIRCOM BOX
ELECTRICAL CABLE PIT	ECP
ESAT COVER	ESAT
ESB COVER	ESB
ESB JUNCTION BOX	ESB BOX
FIRE HYDRANT	FH
GAS VALVE	GV
GULLY	G
INSPECTION COVER	IC
MANHOLE	MH
SEPTIC TANK	SEPTIC
SLUICE VALVE	SV
STOPCOCK	ST

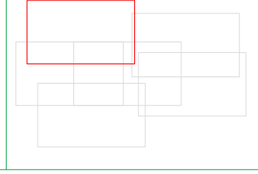
SERVICES :

SERVICE BOX (UNKNOWN)	BOX
TRAFFIC COVER	TLIC
VENT	VENT
WATER METER	WM
UNABLE TO LIFT	UTO

LEVELS :

BED LEVEL	+ BED101.50
EAVE LEVEL	+ E101.50
FLOOR LEVEL	+ FL101.50
INVERT LEVEL	+ IL101.50
ROAD LEVEL	+ 101.50
RIDGE LEVEL	+ R101.50
SOFFIT LEVEL	+ SL101.50
SPOT LEVEL	+ 101.50
TOP OF FENCE LEVEL	+ TOF101.50
TOP OF WALL LEVEL	+ TOW101.50
WATER LEVEL	+ WL101.50
SURVEY CONTROL STATION	

SHEET LAYOUT :



PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

Dun Laoghaire Rathdown County Council

PROJECT:

Old Connaught Road

GRID SYSTEM:	Irish Transverse Mercator
DATUM:	Malin Head (OSGM15)
NOTES:	Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	N/A	Original Drawing

SCALE : 1/200 A1

DATE : 11/10/2023

DRG No: 5972

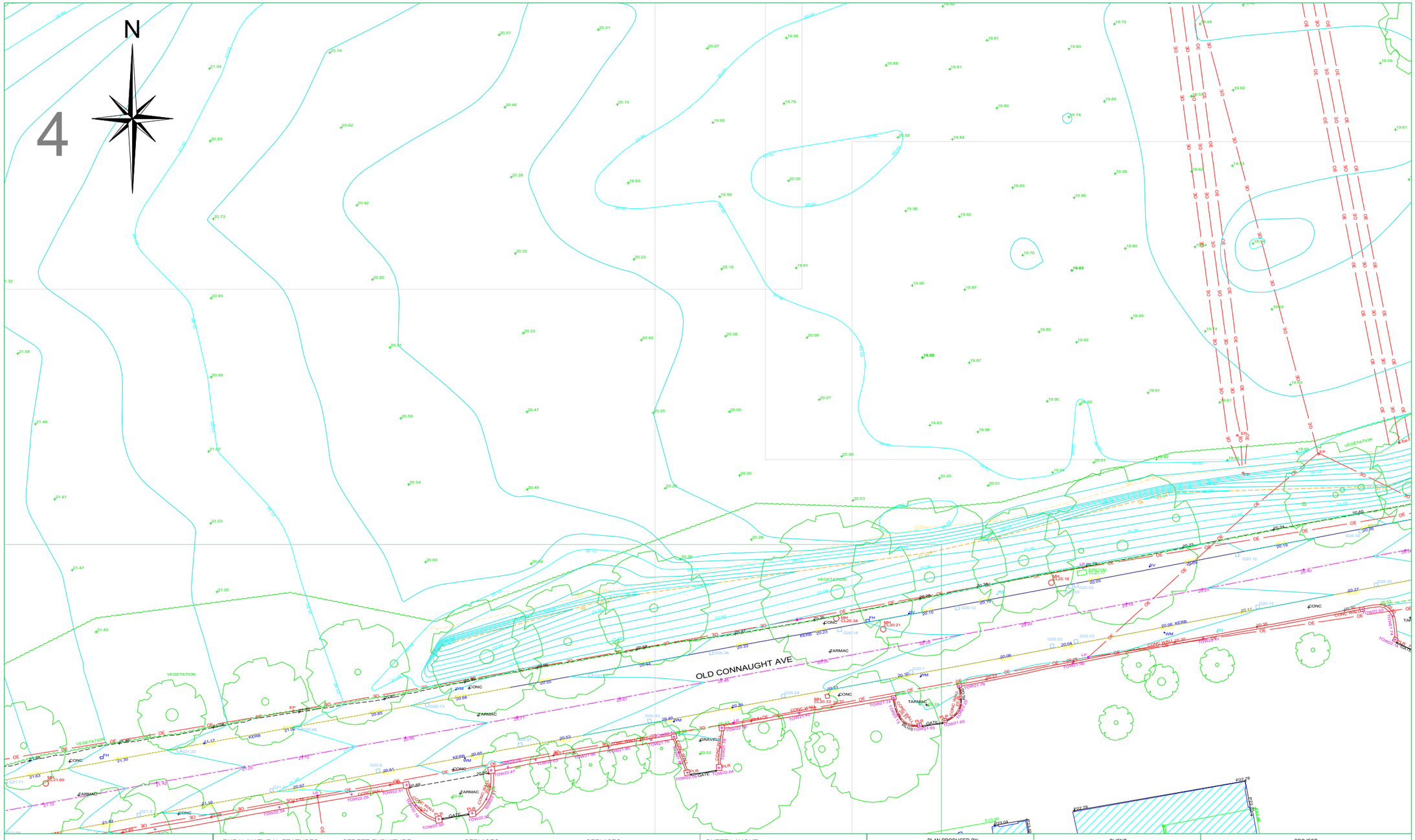
SHEET: 3 of 6

DESCRIPTION : 2D Topographical

SURVEYED BY : F.K.&F.M.

PROCESSED BY : F.S.

CHECKED BY : A.B.



APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

RURAL/NATURAL FEATURES :

BUSH
SAPLING
TREE
HEDGE
TROUGH
CATTLE GRID

LINEWORK:

EMBANKEMENT TOP 101.50
DRAIN 101.50
BREAKLINE 101.50
BUILDING 101.50
KERB BOTTOM 101.50
WALL 101.50
PATH/CHANGE SURFACE 101.50
O/HEAD ELECTRICITY OE
O/HEAD TELECOM OT

STREET FURNITURE :

BOLLARDS BD
BORE HOLE BH
BUS STOP BS
CRASH BARRIER CB
ELECTRICITY POLE EP
EARTHING ROD ER
GATE
GROUND LIGHT LT
ILLUMINATED BOLLARD BOL
LAMP POST LP
MARKER POST MKR
POST POST
POST BOX POST BOX
ROADSIGN RS
SIGN POST SIGN
TELEPHONE BOX TB
TELEPHONE POLE TP
TRAFFIC LIGHT TL
TRIAL PIT TPIT

SERVICES :

AIR VALVE AV
ARMSTRONG JUNCTION AJ
CABLE TV IC CATV
COVER LEVEL CL
EIRCOM COVER EIRCOM
EIRCOM JUNCTION BOX EIRCOM BOX
ELECTRICAL CABLE PIT ECP
ESAT COVER ESAT
ESB COVER ESB
ESB JUNCTION BOX ESB BOX
FIRE HYDRANT FH
GAS VALVE GV
GULLY G
INSPECTION COVER IC
MANHOLE MH
SEPTIC TANK SEPTIC
SLUICE VALVE SV
STOPCOCK ST

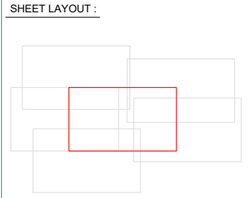
SERVICES :

SERVICE BOX (UNKNOWN) BOX
TRAFFIC COVER TLIC
VENT VENT
WATER METER WM
UNABLE TO LIFT UTO

LEVELS :

BED LEVEL + BED101.50
EAVE LEVEL + E101.50
FLOOR LEVEL + FL101.50
INVERT LEVEL + IL101.50
ROAD LEVEL + 101.50
RIDGE LEVEL + R101.50
SOFFIT LEVEL + SL101.50
SPOT LEVEL + 101.50
TOP OF FENCE LEVEL + TOF101.50
TOP OF WALL LEVEL + TOW101.50
WATER LEVEL + WL101.50
SURVEY CONTROL STATION

SHEET LAYOUT :



PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

Dun Laoghaire Rathdown County Council

PROJECT:

Old Connaught Road

GRID SYSTEM:	Irish Transverse Mercator
DATUM:	Malin Head (OSGM15)
NOTES:	Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	N/A	Original Drawing

SCALE : 1/200 A1

DRG No: 5972

SHEET: 4 of 6

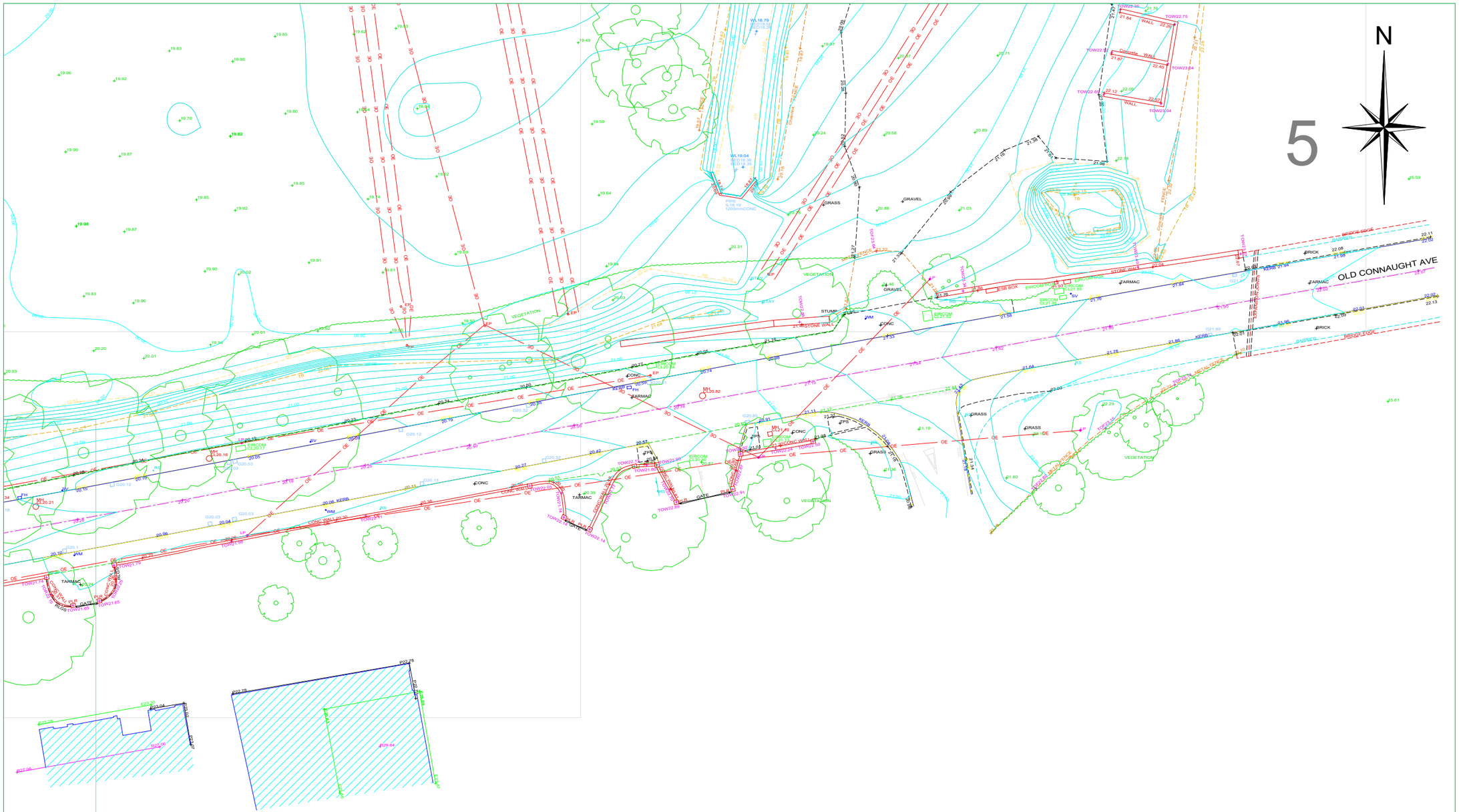
DATE : 11/10/2023

DESCRIPTION : 2D Topographical

SURVEYED BY : F.K.&F.M.

PROCESSED BY : F.S.

CHECKED BY : A.B.



APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

RURAL/NATURAL FEATURES :

BUSH
SAPLING
TREE
HEDGE
TROUGH TR
CATTLE GRID GRID

LINEWORK:

EMBANKEMENT TOP 101.50
DRAIN 101.50
BREAKLINE 101.50
BUILDING 101.50
KERB BOTTOM 101.50
WALL 101.50
PATH/CHANGE SURFACE 101.50
O/HEAD ELECTRICITY OE
O/HEAD TELECOM OT

STREET FURNITURE :

BOLLARDS	BD •
BORE HOLE	BH +
BUS STOP	BS •
CRASH BARRIER	CB
ELECTRICITY POLE	EP •
EARTHING ROD	ER +
GATE	
GROUND LIGHT	LT •
ILLUMINATED BOLLARD	BOL
LAMP POST	LP •
MARKER POST	MKR
POST	POST •
POST BOX	POST BOX +
ROADSIGN	RS • RS
SIGN POST	SIGN
TELEPHONE BOX	TB
TELEPHONE POLE	TP •
TRAFFIC LIGHT	TL •
TRIAL PIT	TPIT +

SERVICES :

AIR VALVE	AV +
ARMSTRONG JUNCTION	AJ
CABLE TV IC	CATV
COVER LEVEL	CL
EIRCOM COVER	EIRCOM
EIRCOM JUNCTION BOX	EIRCOM BOX
ELECTRICAL CABLE PIT	ECP
ESAT COVER	ESAT
ESB COVER	ESB
ESB JUNCTION BOX	ESB BOX
FIRE HYDRANT	FH •
GAS VALVE	GV
GULLY	G
INSPECTION COVER	IC
MANHOLE	MH
SEPTIC TANK	SEPTIC
SLUICE VALVE	SV •
STOPCOCK	ST •

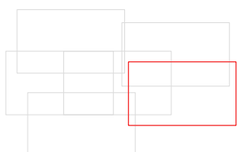
SERVICES :

SERVICE BOX (UNKNOWN)	BOX
TRAFFIC COVER	TLIC
VENT	VENT •
WATER METER	WM •
UNABLE TO LIFT	UTO

LEVELS :

BED LEVEL	+ BED101.50
EAVE LEVEL	+ E101.50
FLOOR LEVEL	+ FL101.50
INVERT LEVEL	+ IL101.50
ROAD LEVEL	+ 101.50
RIDGE LEVEL	+ R101.50
SOFFIT LEVEL	+ SL101.50
SPOT LEVEL	+ 101.50
TOP OF FENCE LEVEL	+ TOF101.50
TOP OF WALL LEVEL	+ TOW101.50
WATER LEVEL	+ WL101.50
SURVEY CONTROL STATION	

SHEET LAYOUT :



PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

Dun Laoghaire Rathdown County Council

PROJECT:

Old Connaught Road

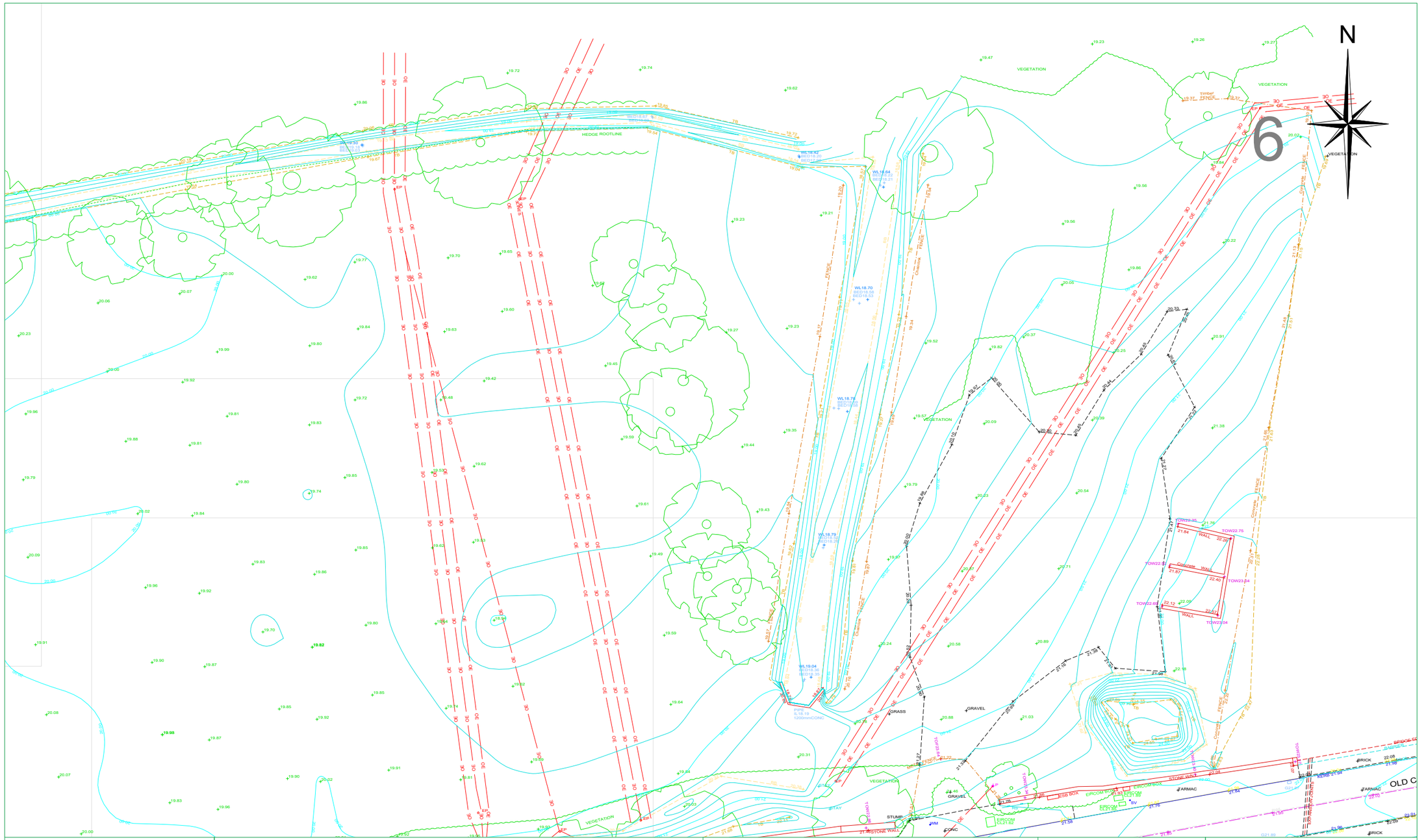
GRID SYSTEM: Irish Transverse Mercator
DATUM: Malin Head (OSGM15)
NOTES: Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	N/A	Original Drawing

SCALE : 1/200 A1
DRG No: 5972
SHEET: 5 of 6

DATE : 11/10/2023
DESCRIPTION : 2D Topographical
SURVEYED BY : F.K.&F.M.
PROCESSED BY : F.S.
CHECKED BY : A.B.



APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

RURAL/NATURAL FEATURES :

BUSH
SAPLING
TREE
HEDGE
TROUGH
CATTLE GRID

LINEWORK:

EMBANKEMENT TOP
DRAIN
BREAKLINE
BUILDING
KERB BOTTOM
WALL
PATH/CHANGE SURFACE
O/HEAD ELECTRICITY
O/HEAD TELECOM

STREET FURNITURE :

BOLLARDS
BORE HOLE
BUS STOP
CRASH BARRIER
ELECTRICITY POLE
EARTHING ROD
GATE
GROUND LIGHT
ILLUMINATED BOLLARD
LAMP POST
MARKER POST
POST
POST BOX
ROADSIGN
SIGN POST
TELEPHONE BOX
TELEPHONE POLE
TRAFFIC LIGHT
TRIAL PIT

SERVICES :

AIR VALVE
ARMSTRONG JUNCTION
CABLE TV IC
COVER LEVEL
EIRCOM COVER
EIRCOM JUNCTION BOX
ELECTRICAL CABLE PIT
ESAT COVER
ESB COVER
ESB JUNCTION BOX
FIRE HYDRANT
GAS VALVE
GULLY
INSPECTION COVER
MANHOLE
SEPTIC TANK
SLUICE VALVE
STOPCOCK

SERVICES :

SERVICE BOX (UNKNOWN)
TRAFFIC COVER
VENT
WATER METER
UNABLE TO LIFT

LEVELS :

BED LEVEL
EAVE LEVEL
FLOOR LEVEL
INVERT LEVEL
ROAD LEVEL
RIDGE LEVEL
SOFFIT LEVEL
SPOT LEVEL
TOP OF FENCE LEVEL
TOP OF WALL LEVEL
WATER LEVEL
SURVEY CONTROL STATION

SHEET LAYOUT :

PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

Dun Laoghaire Rathdown County Council

GRID SYSTEM:	Irish Transverse Mercator
DATUM:	Malin Head (OSGM15)
NOTES:	Drawing Contains Scale Factor

REVISIONS:

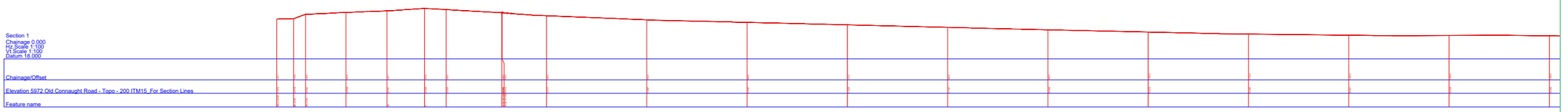
No.	Date	Description
001	N/A	Original Drawing

PROJECT:

Old Connaught Road

SCALE :	1/200 A1	DATE :	11/10/2023
DRG No:	5972	DESCRIPTION :	2D Topographical
		SURVEYED BY :	F.K.&F.M.
SHEET:	6 of 6	PROCESSED BY :	F.S.
		CHECKED BY :	A.B.

1



APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

RURAL/NATURAL FEATURES :

BUSH
SAPLING
TREE
HEDGE
TROUGH
CATTLE GRID
GRID

LINEWORK:

EMBANKEMENT TOP +101.50
DRAIN +101.50
BREAKLINE +101.50
BUILDING +101.50
KERB BOTTOM +101.50
WALL +101.50
PATH/CHANGE SURFACE +101.50
O/HEAD ELECTRICITY OE
O/HEAD TELECOM OT

STREET FURNITURE :

BOLLARDS BD
BORE HOLE BH+
BUS STOP BS
CRASH BARRIER CB
ELECTRICITY POLE EP
EARTHING REM ER +
GATE
GROUND LIGHT LT
ILLUMINATED BOLLARD BOL
LAMP POST LP
MARKER POST MKR
POST POST
POST BOX POST BOX +
ROADSIGN RS
SIGN POST SIGN
TELEPHONE BOX TB
TELEPHONE POLE TP
TRAFFIC LIGHT TL
TRIAL PIT TPIT +

SERVICES :

AIR VALVE AV +
ARMSTRONG JUNCTION AJ
CABLE TV IC CATV
COVER LEVEL CL
EIRCOM COVER EIRCOM
EIRCOM JUNCTION BOX EIRCOM BOX
ELECTRICAL CABLE PIT ECP
ESAT COVER ESAT
ESB COVER ESB
ESB JUNCTION BOX ESB BOX
FIRE HYDRANT FH
GAS VALVE GV
GULLY G
INSPECTION COVER IC
MANHOLE MH
SEPTIC TANK SEPTIC
SLUICE VALVE SV
STOPCOCK ST

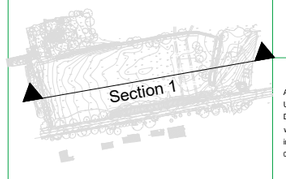
SERVICES :

SERVICE BOX (UNKNOWN) BOX
TRAFFIC COVER TLIC
VENT VENT
WATER METER WM
UNABLE TO LIFT UTO

LEVELS :

BED LEVEL + BED101.50
EAVE LEVEL + E101.50
FLOOR LEVEL + FL101.50
INVERT LEVEL + IL101.50
ROAD LEVEL + 101.50
RIDGE LEVEL + R101.50
SOFFIT LEVEL + SL101.50
SPOT LEVEL + 101.50
TOP OF FENCE LEVEL + TOF101.50
TOP OF WALL LEVEL + TOW101.50
WATER LEVEL + WL101.50
SURVEY CONTROL STATION

SHEET LAYOUT :



PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

Dun Laoghaire - Rathdown

GRID SYSTEM: Irish Transverse Mercator
DATUM: Malin Head (OSGM15)
NOTES: Drawing Contains Scale Factor

REVISIONS:

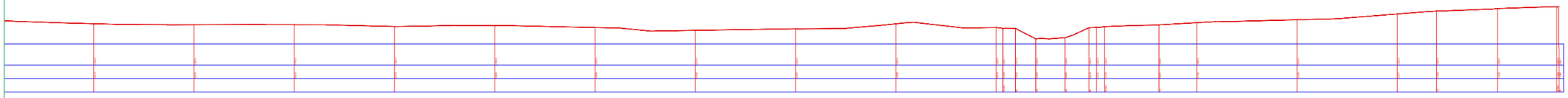
No.	Date	Description
001	N/A	Original Drawing

PROJECT:

Old Connaught Road

SCALE : 1/200 A1
DRG No: 5972
SHEET: 1 of 2

DATE : 26/10/23
DESCRIPTION : Sections
SURVEYED BY : F.K. & F.M.
PROCESSED BY : A.B.
CHECKED BY : A.B.



APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

RURAL/NATURAL FEATURES :

BUSH
SAPLING
TREE
HEDGE
TROUGH
CATTLE GRID

LINEWORK:

EMBANKEMENT TOP 101.50
DRAIN 101.50
BREAKLINE 101.50
BUILDING 101.50
KERB BOTTOM 101.50
WALL 101.50
PATH/CHANGE SURFACE 101.50
O/HEAD ELECTRICITY OE
O/HEAD TELECOM OT

STREET FURNITURE :

BOLLARDS BD
BORE HOLE BH
BUS STOP BS
CRASH BARRIER CB
ELECTRICITY POLE EP
EARTHING ROD ER
GATE
GROUND LIGHT LT
ILLUMINATED BOLLARD BOL
LAMP POST LP
MARKER POST MKR
POST POST
POST BOX POST BOX
ROADSIGN RS
SIGN POST SIGN
TELEPHONE BOX TB
TELEPHONE POLE TP
TRAFFIC LIGHT TL
TRIAL PIT TPIT

SERVICES :

AIR VALVE AV
ARMSTRONG JUNCTION AJ
CABLE TV IC CATV
COVER LEVEL CL
EIRCOM COVER EIRCOM
EIRCOM JUNCTION BOX EIRCOM BOX
ELECTRICAL CABLE PIT ECP
ESAT COVER ESAT
ESB COVER ESB
ESB JUNCTION BOX ESB BOX
FIRE HYDRANT FH
GAS VALVE GV
GULLY G
INSPECTION COVER IC
MANHOLE MH
SEPTIC TANK SEPTIC
SLUICE VALVE SV
STOPCOCK ST

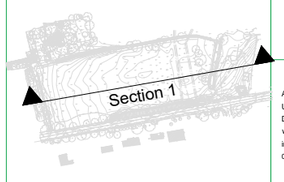
SERVICES :

SERVICE BOX (UNKNOWN) BOX
TRAFFIC COVER TLIC
VENT VENT
WATER METER WM
UNABLE TO LIFT UTO

LEVELS :

BED LEVEL +BED101.50
EAVE LEVEL +E101.50
FLOOR LEVEL +FL101.50
INVERT LEVEL +IL101.50
ROAD LEVEL +101.50
RIDGE LEVEL +R101.50
SOFFIT LEVEL +SL101.50
SPOT LEVEL +101.50
TOP OF FENCE LEVEL +TOF101.50
TOP OF WALL LEVEL +TOW101.50
WATER LEVEL +WL101.50
SURVEY CONTROL STATION

SHEET LAYOUT :



PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

Dun Laoghaire - Rathdown

GRID SYSTEM: Irish Transverse Mercator
DATUM: Malin Head (OSGM15)
NOTES: Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	N/A	Original Drawing

PROJECT:

Old Connaught Road

SCALE : 1/200 A1

DATE : 26/10/23

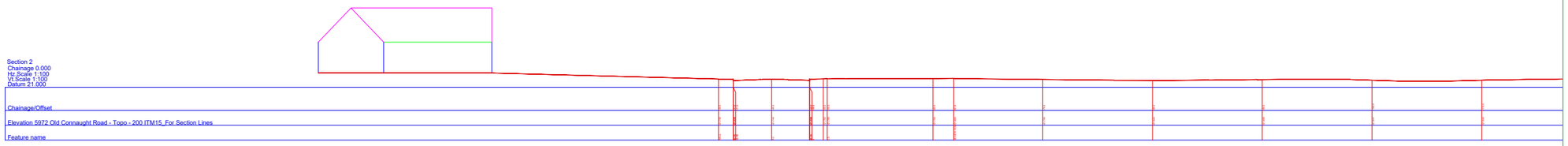
DRG No: 5972

DESCRIPTION : Sections
SURVEYED BY : F.K. & F.M.

SHEET: 2 of 2

PROCESSED BY : A.B.
CHECKED BY : A.B.

3



APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

RURAL/NATURAL FEATURES :

BUSH
SAPLING
TREE
HEDGE
TROUGH
CATTLE GRID

LINEWORK:

EMBANKEMENT TOP
DRAIN
BREAKLINE
BUILDING
KERB BOTTOM
WALL
PATH/CHANGE SURFACE
O/HEAD ELECTRICITY
O/HEAD TELECOM

STREET FURNITURE :

BOLLARDS
BORE HOLE
BUS STOP
CRASH BARRIER
ELECTRICITY POLE
EARTHING ROD
GATE
GROUND LIGHT
ILLUMINATED BOLLARD
LAMP POST
MARKER POST
POST
POST BOX
ROADSIGN
SIGN POST
TELEPHONE BOX
TELEPHONE POLE
TRAFFIC LIGHT
TRIAL PIT

SERVICES :

AIR VALVE
ARMSTRONG JUNCTION
CABLE TV IC
COVER LEVEL
EIRCOM COVER
EIRCOM JUNCTION BOX
ELECTRICAL CABLE PIT
ESAT COVER
ESB COVER
ESB JUNCTION BOX
FIRE HYDRANT
GAS VALVE
GULLY
INSPECTION COVER
MANHOLE
SEPTIC TANK
SLUICE VALVE
STOPCOCK

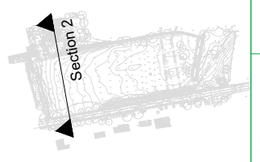
SERVICES :

SERVICE BOX (UNKNOWN)
TRAFFIC COVER
VENT
WATER METER
UNABLE TO LIFT

LEVELS :

BED LEVEL
EAVE LEVEL
FLOOR LEVEL
INVERT LEVEL
ROAD LEVEL
RIDGE LEVEL
SOFFIT LEVEL
SPOT LEVEL
TOP OF FENCE LEVEL
TOP OF WALL LEVEL
WATER LEVEL
SURVEY CONTROL STATION

SHEET LAYOUT :



PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

Dun Laoghaire - Rathdown

PROJECT:

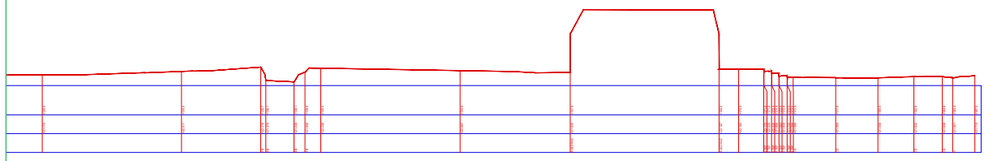
Old Connaught Road

GRID SYSTEM: Irish Transverse Mercator
DATUM: Malin Head (OSGM15)
NOTES: Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	N/A	Original Drawing

SCALE : 1/200 A1
DATE : 26/10/23
DRG No: 5972
SHEET: 3 of 2
DESCRIPTION : Sections
SURVEYED BY : F.K. & F.M.
PROCESSED BY : A.B.
CHECKED BY : A.B.



APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

RURAL/NATURAL FEATURES :

BUSH
SAPLING
TREE
HEDGE
TROUGH
CATTLE GRID

LINEWORK:

EMBANKEMENT TOP 101.50
DRAIN 101.50
BREAKLINE 101.50
BUILDING 101.50
KERB BOTTOM 101.50
WALL 101.50
PATH/CHANGE SURFACE 101.50
O/HEAD ELECTRICITY OE
O/HEAD TELECOM OT

STREET FURNITURE :

BOLLARDS BD
BORE HOLE BH
BUS STOP BS
CRASH BARRIER CB
ELECTRICITY POLE EP
EARTHING ROD ER
GATE
GROUND LIGHT LT
ILLUMINATED BOLLARD BOL
LAMP POST LP
MARKER POST MKR
POST POST
POST BOX POST BOX
ROADSIGN RS
SIGN POST SIGN
TELEPHONE BOX TB
TELEPHONE POLE TP
TRAFFIC LIGHT TL
TRIAL PIT TPIT

SERVICES :

AIR VALVE AV
ARMSTRONG JUNCTION AJ
CABLE TV IC CATV
COVER LEVEL CL
EIRCOM COVER EIRCOM
EIRCOM JUNCTION BOX EIRCOM BOX
ELECTRICAL CABLE PIT ECP
ESAT COVER ESAT
ESB COVER ESB
ESB JUNCTION BOX ESB BOX
FIRE HYDRANT FH
GAS VALVE GV
GULLY G
INSPECTION COVER IC
MANHOLE MH
SEPTIC TANK SEPTIC
SLUICE VALVE SV
STOPCOCK ST

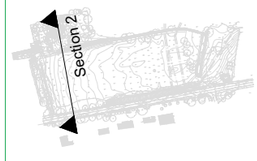
SERVICES :

SERVICE BOX (UNKNOWN) BOX
TRAFFIC COVER TLIC
VENT VENT
WATER METER WM
UNABLE TO LIFT UTO

LEVELS :

BED LEVEL BED101.50
EAVE LEVEL E101.50
FLOOR LEVEL FL101.50
INVERT LEVEL IL101.50
ROAD LEVEL 101.50
RIDGE LEVEL R101.50
SOFFIT LEVEL SL101.50
SPOT LEVEL 101.50
TOP OF FENCE LEVEL TOF101.50
TOP OF WALL LEVEL TOW101.50
WATER LEVEL WL101.50
SURVEY CONTROL STATION

SHEET LAYOUT :



PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

Dun Laoghaire - Rathdown

PROJECT:

Old Connaught Road

GRID SYSTEM: Irish Transverse Mercator
DATUM: Malin Head (OSGM15)
NOTES: Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	N/A	Original Drawing

SCALE : 1/200 A1

DATE : 26/10/23

DRG No: 5972

DESCRIPTION : Sections
SURVEYED BY : F.K. & F.M.
PROCESSED BY : A.B.
CHECKED BY : A.B.

SHEET: 4 of 2

Appendix C OPW Historic Flood Events Record

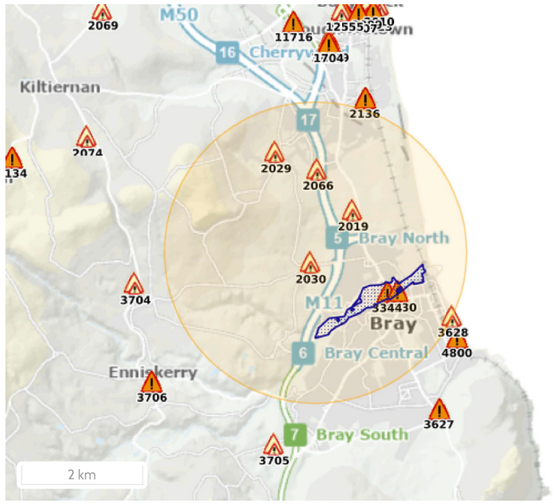
Past Flood Event Local Area Summary Report

OPW Oifig na nOibreacha Poiblí Office of Public Works

Report Produced: **20/12/2024 15:35**

This Past Flood Event Summary Report summarises all past flood events within 2.5 kilometres of the map centre.

This report has been downloaded from www.floodinfo.ie (the "**Website**"). The users should take account of the restrictions and limitations relating to the content and use of the Website that are explained in the Terms and Conditions. It is a condition of use of the Website that you agree to be bound by the disclaimer and other terms and conditions set out on the Website and to the privacy policy on the Website.



Map Legend

- Single Flood Event
- Recurring Flood Event
- Past Flood Event Extents
- Drainage Districts Benefited Lands*
- Land Commission Benefited Lands*
- Arterial Drainage Schemes Benefited Lands*

* Important: These maps do not indicate flood hazard or flood extent. Their purpose and scope is explained on Floodinfo.ie

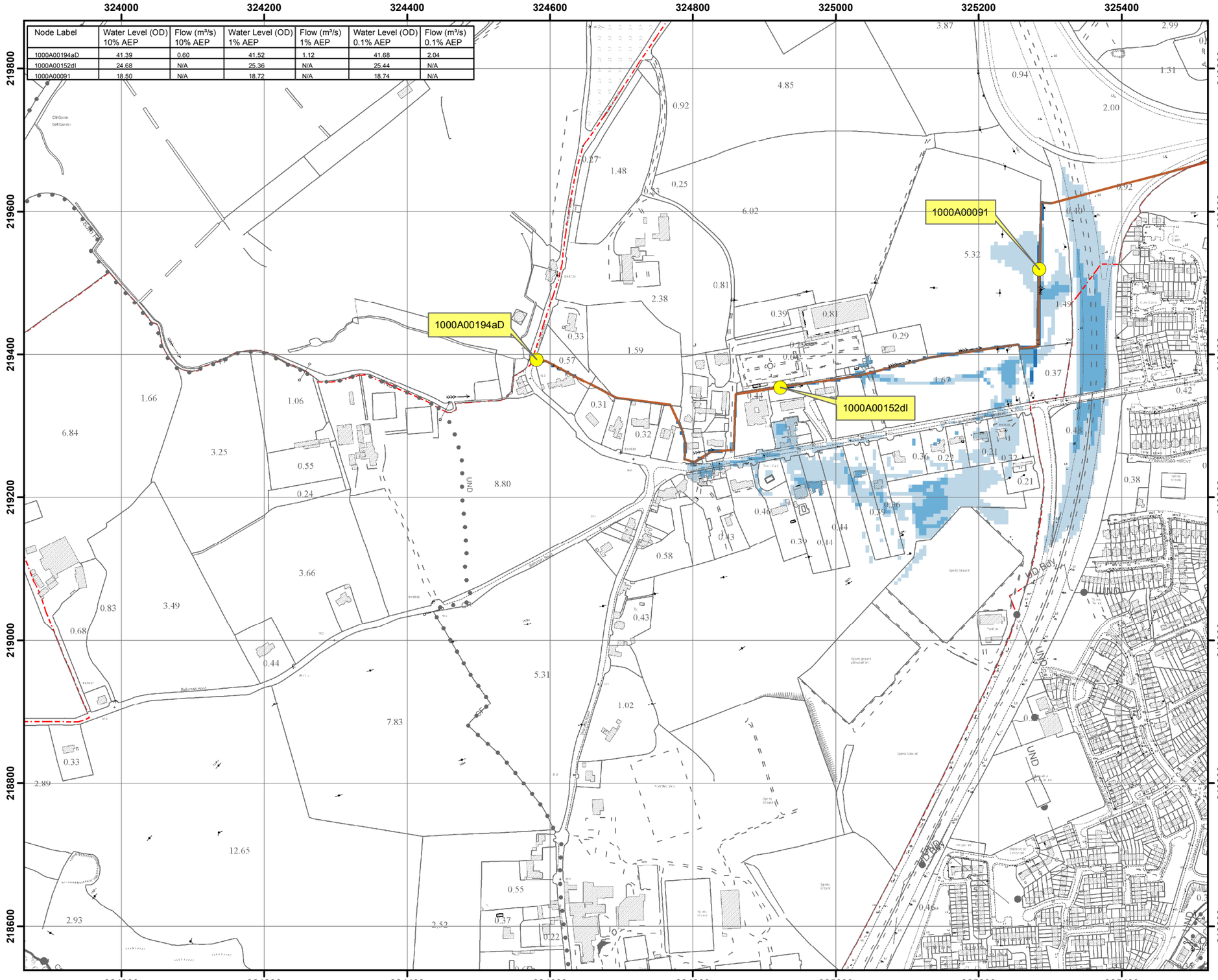
8 Results

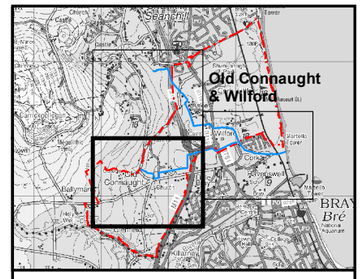
	Name (Flood_ID)	Start Date	Event Location
1.	Dargle Bray 1905 (ID-3344)	24/08/1905	Approximate Point
	Additional Information: Reports (4) Press Archive (54)		
2.	Dargle Bray Nov 1965 (ID-2182)	17/11/1965	Approximate Point
	Additional Information: Reports (4) Press Archive (3)		
3.	Ferndale Road Recurring (ID-2029)	n/a	Exact Point
	Additional Information: Reports (3) Press Archive (0)		
4.	Crinken Woodbrook Stream Recurring (ID-2019)	n/a	Exact Point
	Additional Information: Reports (5) Press Archive (0)		
5.	Old Connaught Ave Recurring (ID-2030)	n/a	Exact Point
	Additional Information: Reports (2) Press Archive (0)		
6.	Springmount Shankill Recurring (ID-2066)	n/a	Exact Point
	Additional Information: Reports (2) Press Archive (0)		

	Name (Flood_ID)	Start Date	Event Location
7.	Flooding at Bray on 25/12/2021 (ID-14130)	25/12/2021	Approximate Point
	Additional Information: Reports (0) Press Archive (0)		
8.	Dargle Bray August 1986 (ID-235)	24/08/1986	Area
	Additional Information: Reports (9) Press Archive (38)		

Appendix D CFRAMS Flood Extent and Depth Mapping

Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
1000A00194aD	41.39	0.60	41.52	1.12	41.68	2.04
1000A00152dI	24.68	N/A	25.36	N/A	25.44	N/A
1000A00091	18.50	N/A	18.72	N/A	18.74	N/A





IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPLANY THIS MAP.

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Node Point
- Node ID Node Label

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

OPW Oifig na nOibreacha Poiblí The Office of Public Works

RPS

The Office of Public Works
Jonathan Swift Street
Trim
Co Meath

Elmwood House T +44(0) 28 90 667914
74 Boucher Road F +44(0) 28 90 668286
Belfast W www.rpsgroup.com
BT12 6RZ E ireland@rpsgroup.com

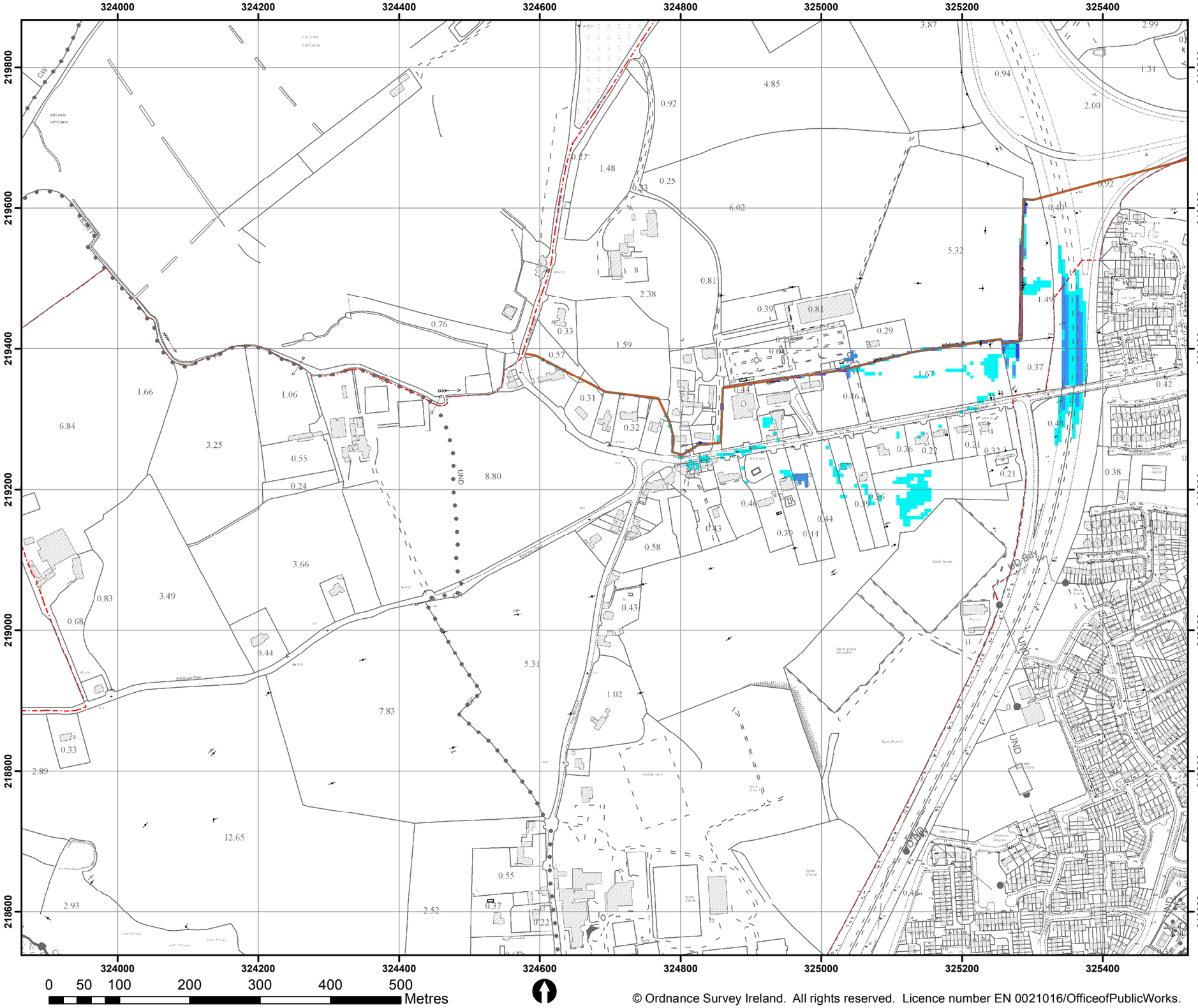
Map:
Old Connaught & Wilford Fluvial Flood Extents

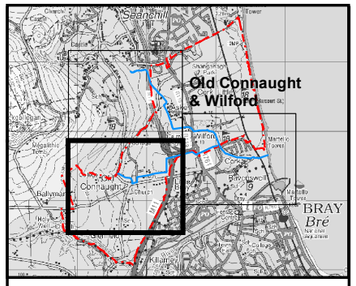
Map Type:	**EXTENT**		
Source:	**FLUVIAL**		
Map Area:	**HPW**		
Scenario:	**CURRENT**		
Drawn By :	**F.M.C.**	**Date :**	**27 July 2016**
Checked By :	**J.C.**	**Date :**	**27 July 2016**
Approved By :	**G.G.**	**Date :**	**27 July 2016**

Drawing No. :
E10OLD_EXFCD_F0_03

Map Series : Page 3 of 3

Drawing Scale : 1:5,000 @ A3





IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPLANY THIS MAP.

Legend

1% Fluvial AEP Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m

Modelled River Centreline

AFA Extents

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

OPW
Oifig na nOibreacha Poiblí
The Office of Public Works

RPS

The Office of Public Works
Jonathan Swift Street
Trim
Co Meath

Elmwood House
74 Boucher Road
Belfast
BT12 6RZ

T +44(0) 28 90 667914
F +44(0) 28 90 668286
W www.rpsgroup.com
E ireland@rpsgroup.com

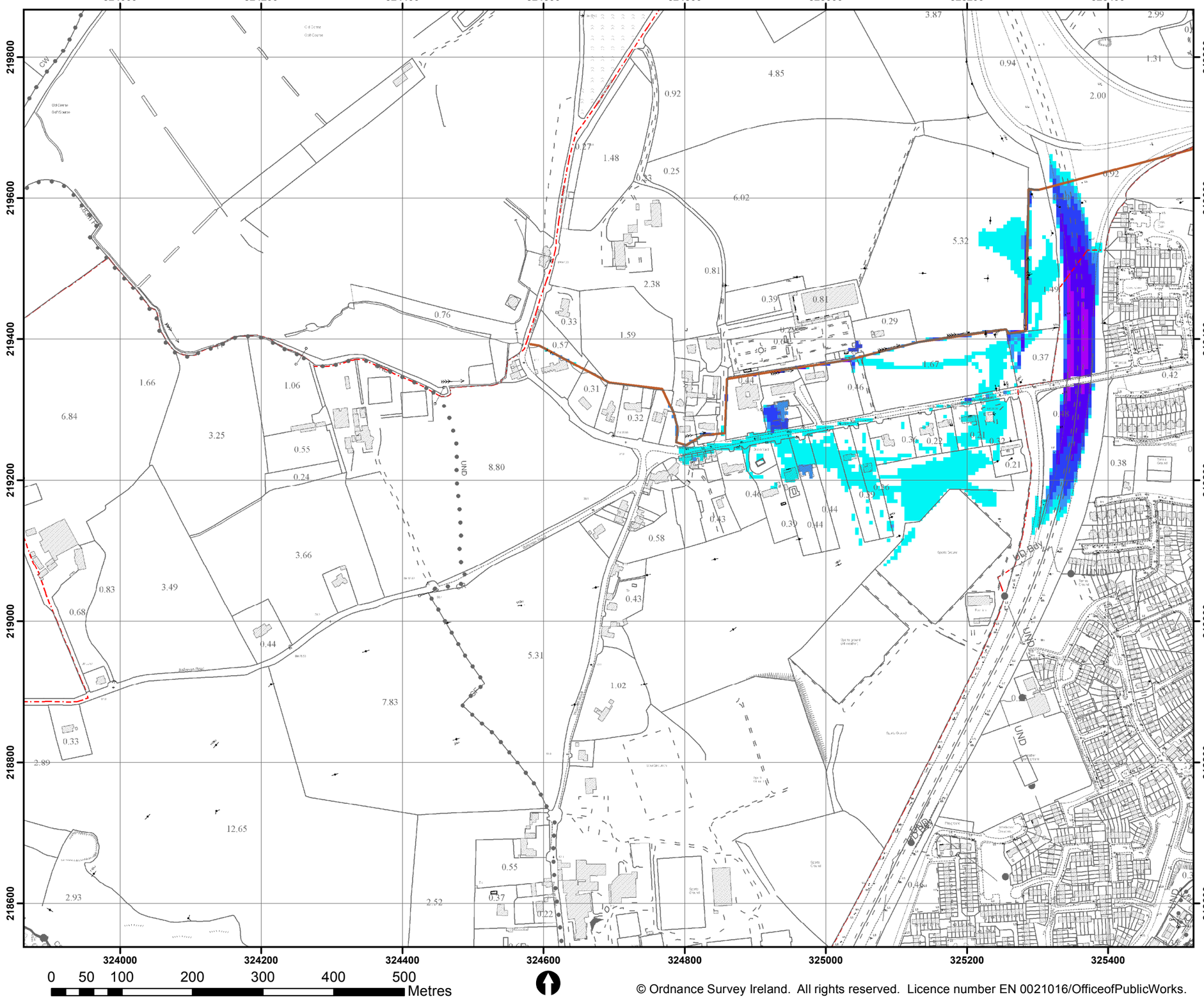
Map:
Old Connaught & Wilford Fluvial Flood Depths

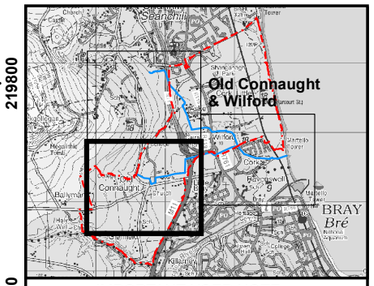
Map Type:	DEPTH	
Source:	FLUVIAL	
Map Area:	HPW	
Scenario:	CURRENT	
Drawn By :	C.McG.	Date : 4 August 2016
Checked By :	S.P.	Date : 4 August 2016
Approved By :	G.G.	Date : 4 August 2016

Drawing No. :
E10OLD_DPFCD010_F0_03

Map Series : **Page 3 of 3**

Drawing Scale : 1:5,000 @ A3





IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPLANY THIS MAP.

Legend

0.1% Fluvial AEP Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m

Modelled River Centreline

AFA Extents

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

OPW
Oifig na nOibreacha Poiblí
The Office of Public Works

RPS

The Office of Public Works
Jonathan Swift Street
Trim
Co Meath

Elmwood House
74 Boucher Road
Belfast
BT12 6RZ

T +44(0) 28 90 667914
F +44(0) 28 90 668286
W www.rpsgroup.com
E ireland@rpsgroup.com

Map:
Old Connaught & Wilford Fluvial Flood Depths

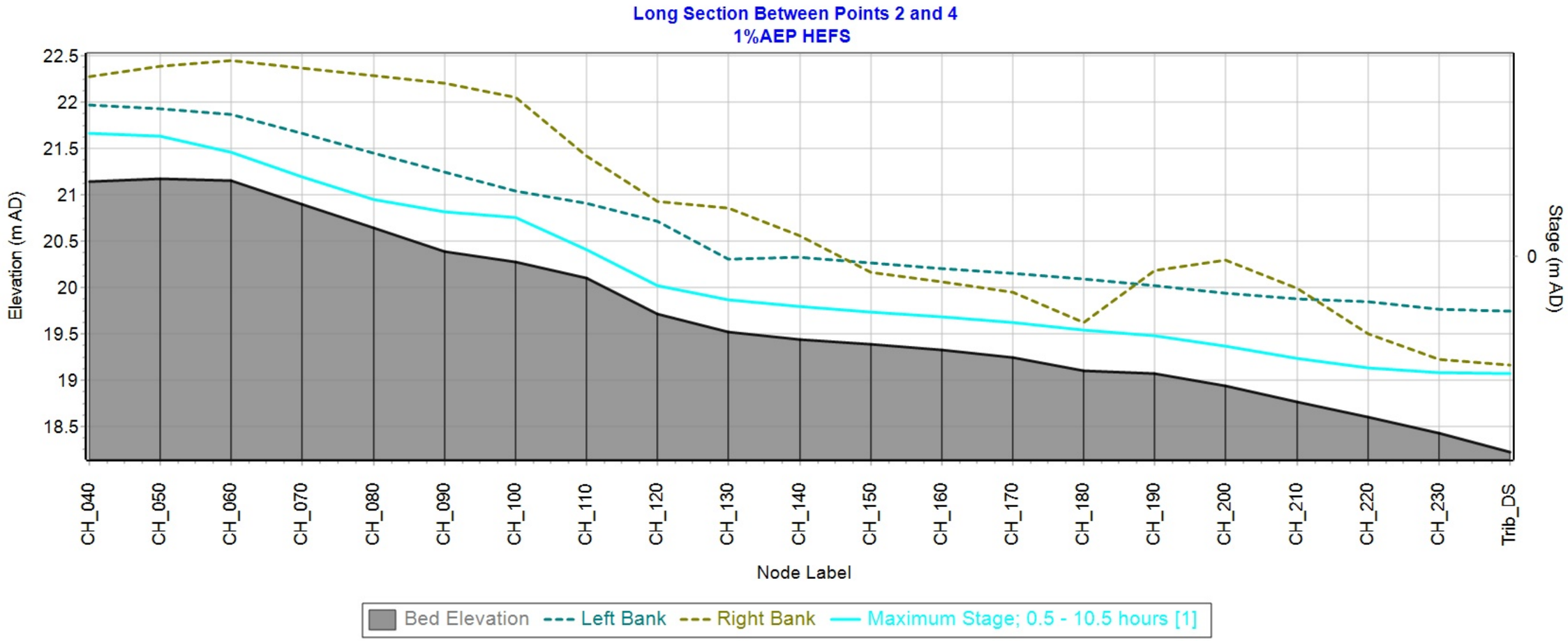
Map Type:	**DEPTH**	
Source:	**FLUVIAL**	
Map Area:	**HPW**	
Scenario:	**CURRENT**	
Drawn By :	**C.McG.**	**Date : 4 August 2016**
Checked By :	**S.P.**	**Date : 4 August 2016**
Approved By :	**G.G.**	**Date : 4 August 2016**

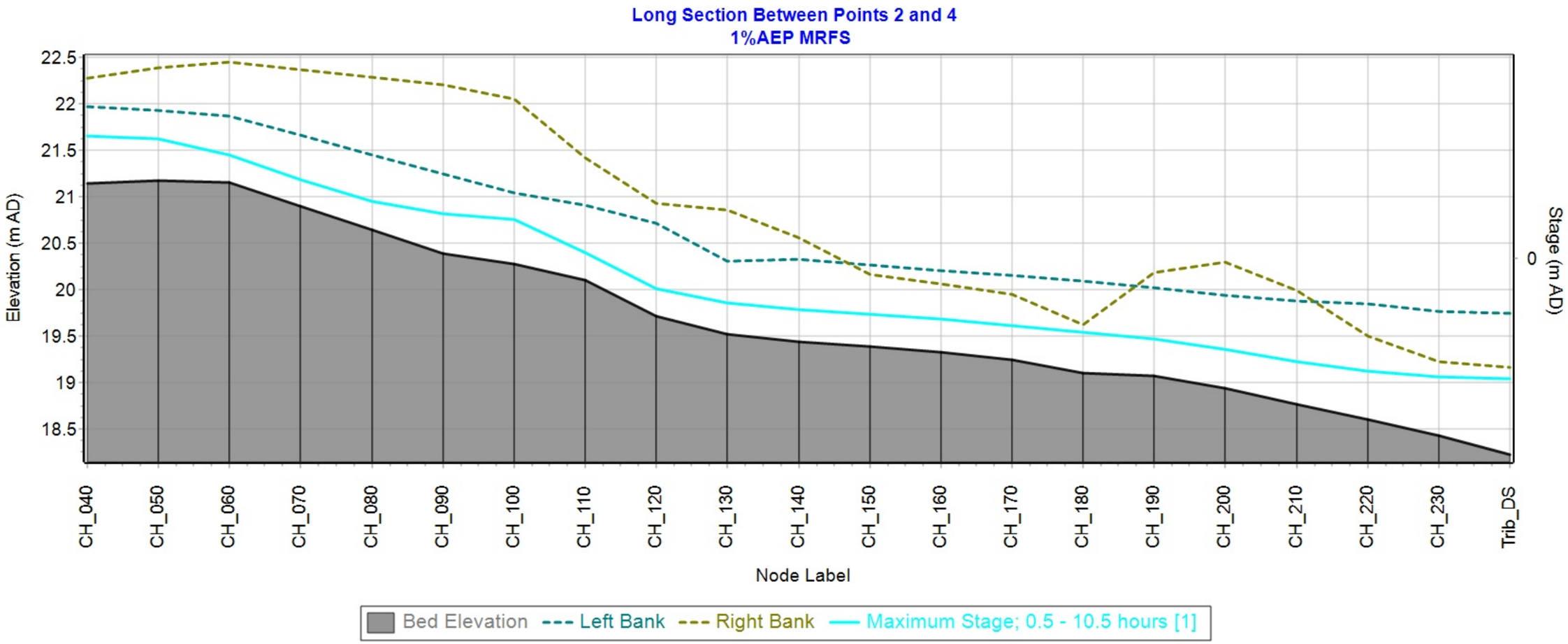
Drawing No. :
E10OLD_DPFCD001_F0_03

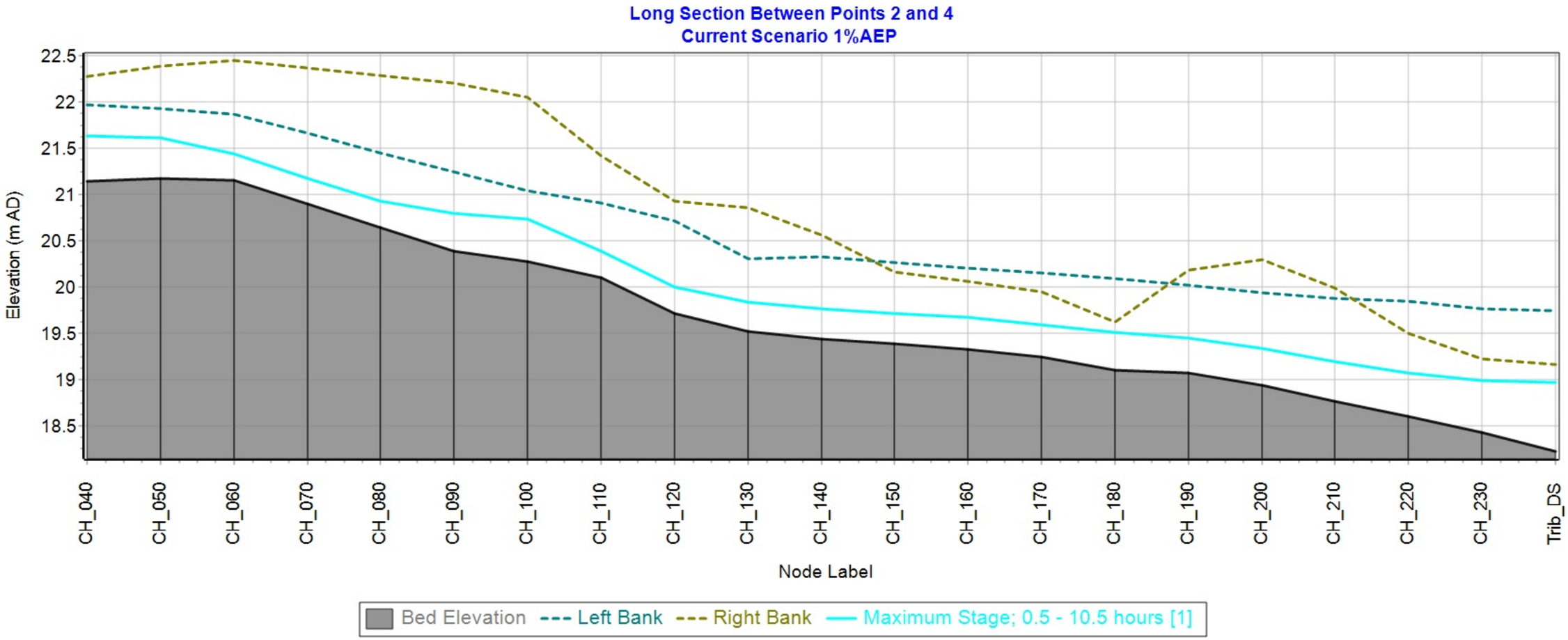
Map Series : Page 3 of 3

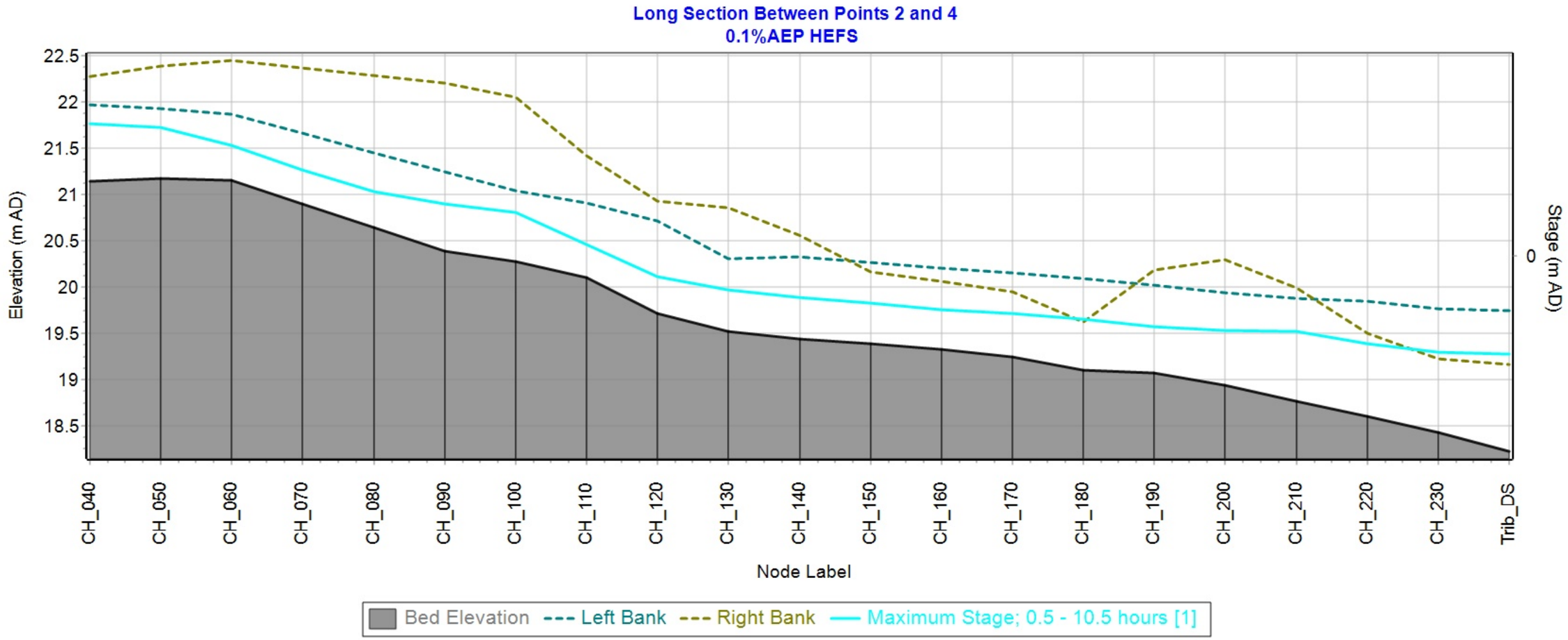
Drawing Scale : 1:5,000 @ A3

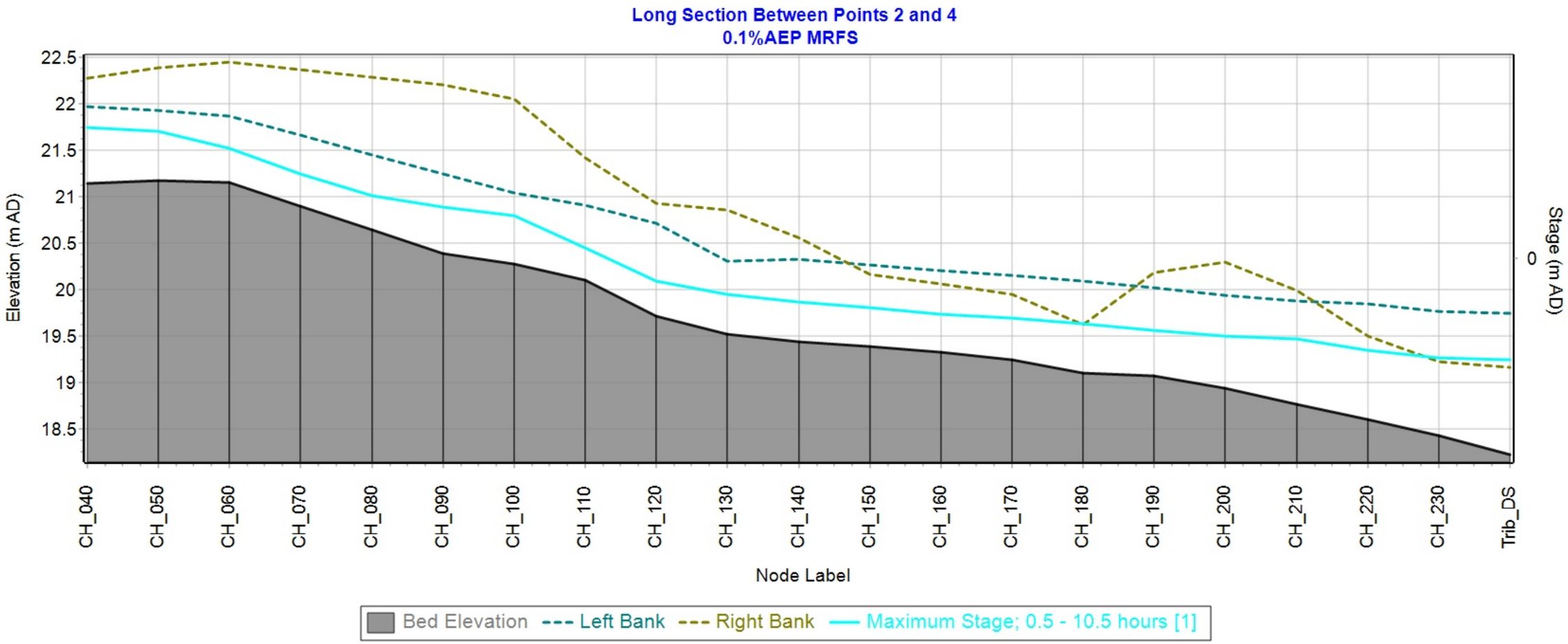
Appendix E Flood Modelling Results

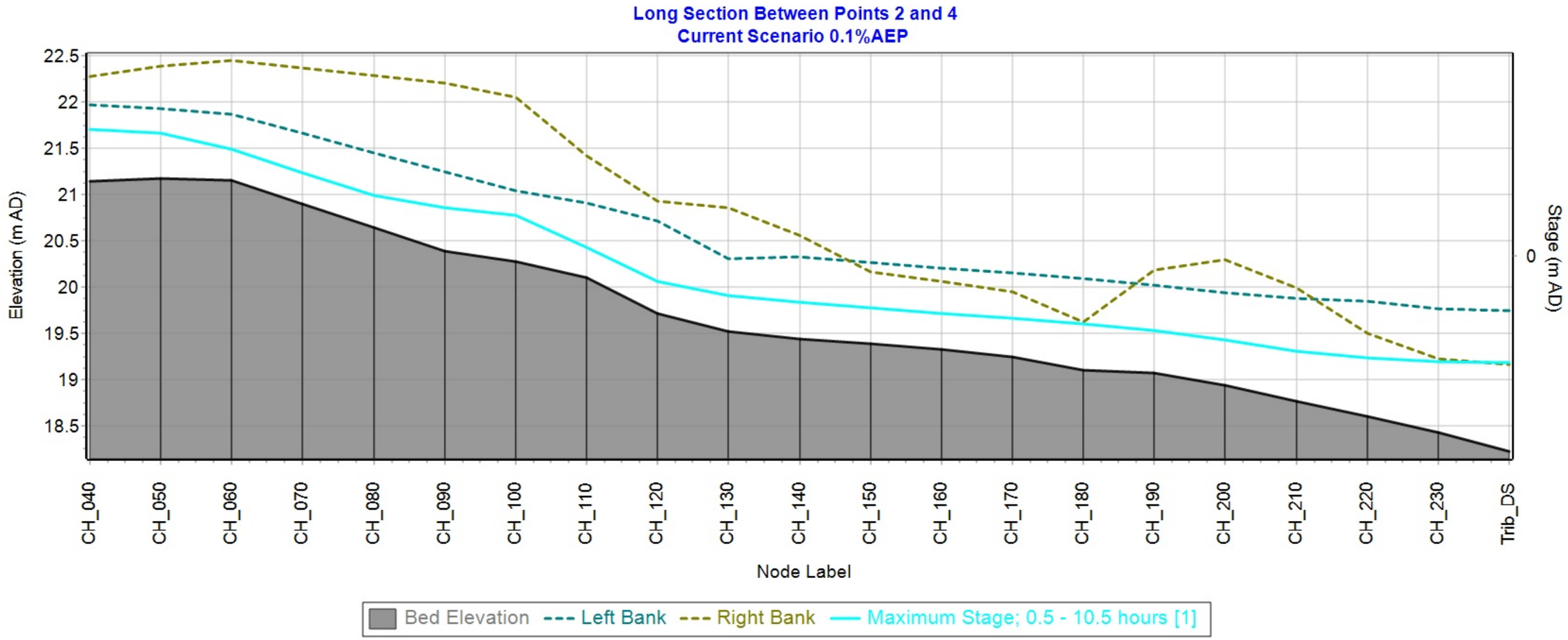

Long Section Between Points 2 and 4
1%AEP HEFS
Elevation (m AD)
22.5
22
21.5
21
20.5
20
19.5
19
18.5
Stage (m AD)
0
CH_040
CH_050
CH_060
CH_070
CH_080
CH_090
CH_100
CH_110
CH_120
CH_130
CH_140
CH_150
CH_160
CH_170
CH_180
CH_190
CH_200
CH_210
CH_220
CH_230
Trib_DS
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]

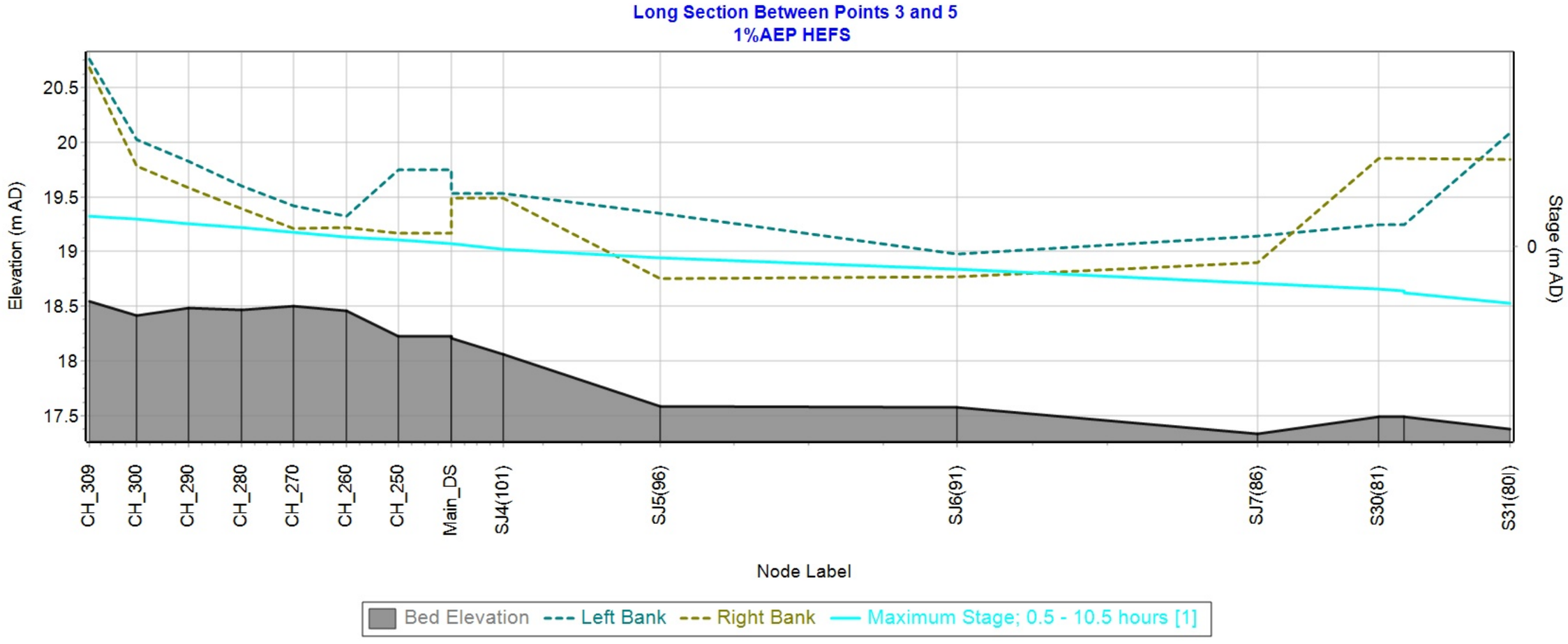

Long Section Between Points 2 and 4
1%AEP MRFS
Elevation (m AD)
22.5
22
21.5
21
20.5
20
19.5
19
18.5
Stage (m AD)
0
CH_040
CH_050
CH_060
CH_070
CH_080
CH_090
CH_100
CH_110
CH_120
CH_130
CH_140
CH_150
CH_160
CH_170
CH_180
CH_190
CH_200
CH_210
CH_220
CH_230
Trib_DS
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]

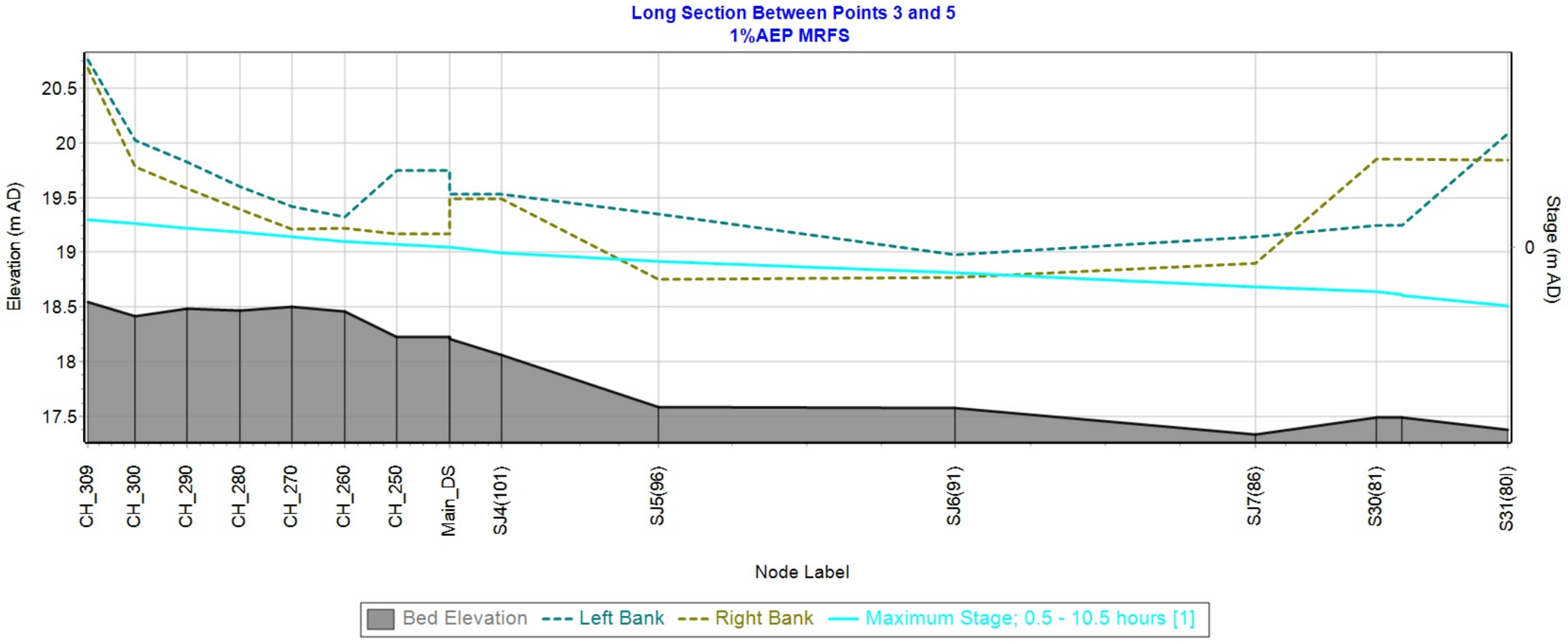

Long Section Between Points 2 and 4
Current Scenario 1%AEP
Elevation (m AD)
22.5
22
21.5
21
20.5
20
19.5
19
18.5
CH_040
CH_050
CH_060
CH_070
CH_080
CH_090
CH_100
CH_110
CH_120
CH_130
CH_140
CH_150
CH_160
CH_170
CH_180
CH_190
CH_200
CH_210
CH_220
CH_230
Trib_DS
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]

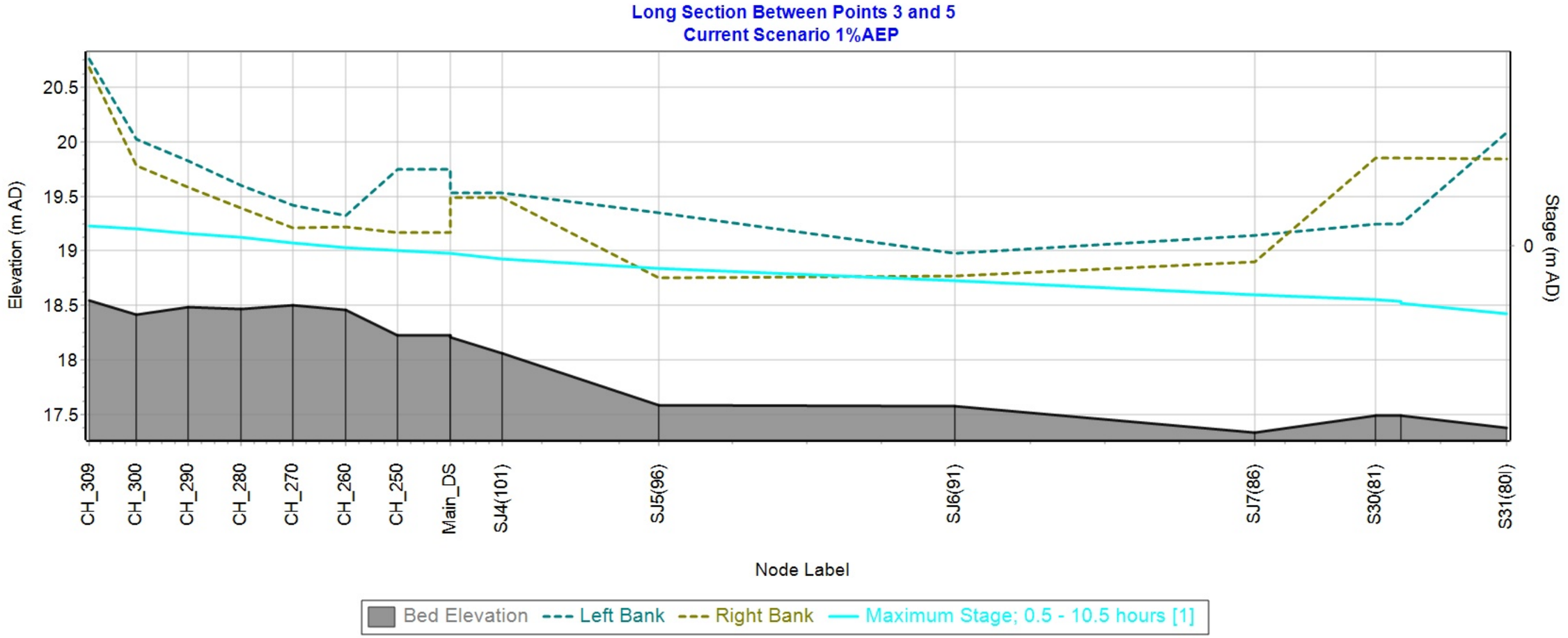

Long Section Between Points 2 and 4
0.1%AEP HEFS
Elevation (m AD)
22.5
22
21.5
21
20.5
20
19.5
19
18.5
Stage (m AD)
0
CH_040
CH_050
CH_060
CH_070
CH_080
CH_090
CH_100
CH_110
CH_120
CH_130
CH_140
CH_150
CH_160
CH_170
CH_180
CH_190
CH_200
CH_210
CH_220
CH_230
Trib_DS
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]

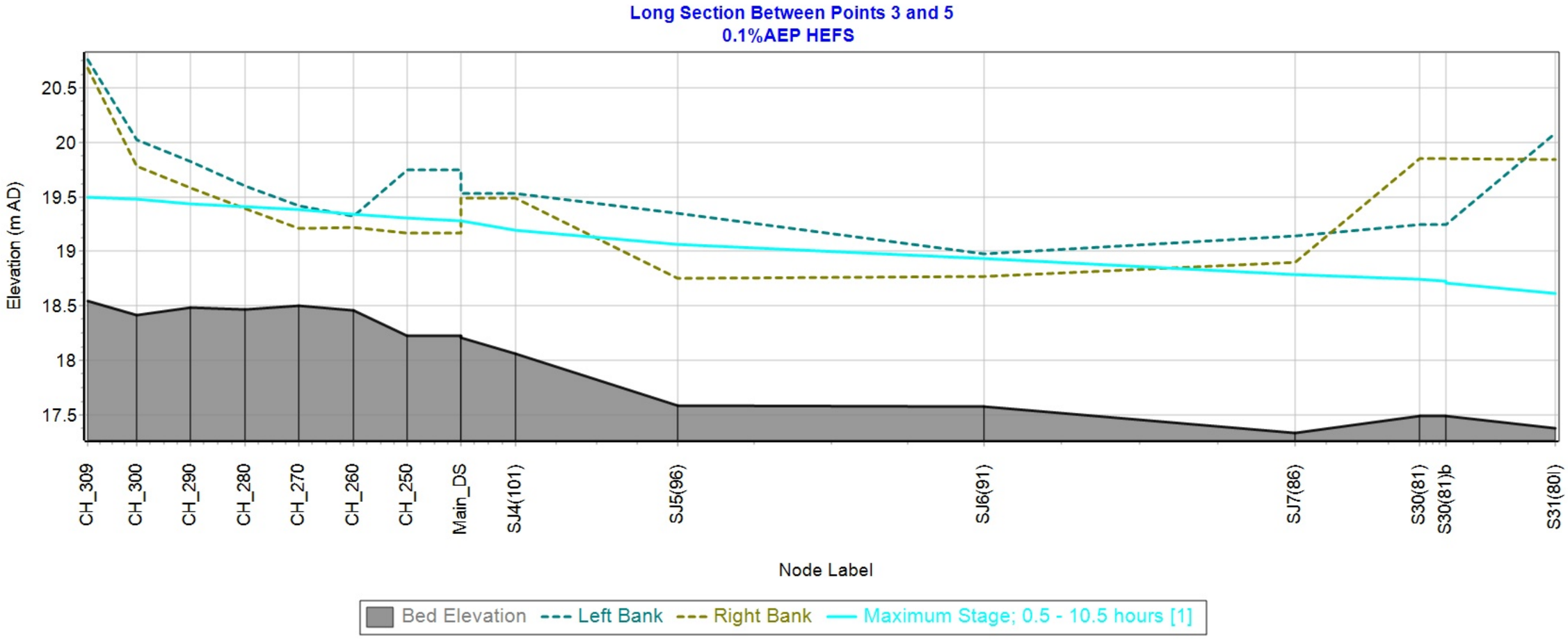

Long Section Between Points 2 and 4
0.1%AEP MRFS
Elevation (m AD)
22.5
22
21.5
21
20.5
20
19.5
19
18.5
Stage (m AD)
0
CH_040
CH_050
CH_060
CH_070
CH_080
CH_090
CH_100
CH_110
CH_120
CH_130
CH_140
CH_150
CH_160
CH_170
CH_180
CH_190
CH_200
CH_210
CH_220
CH_230
Trib_DS
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]

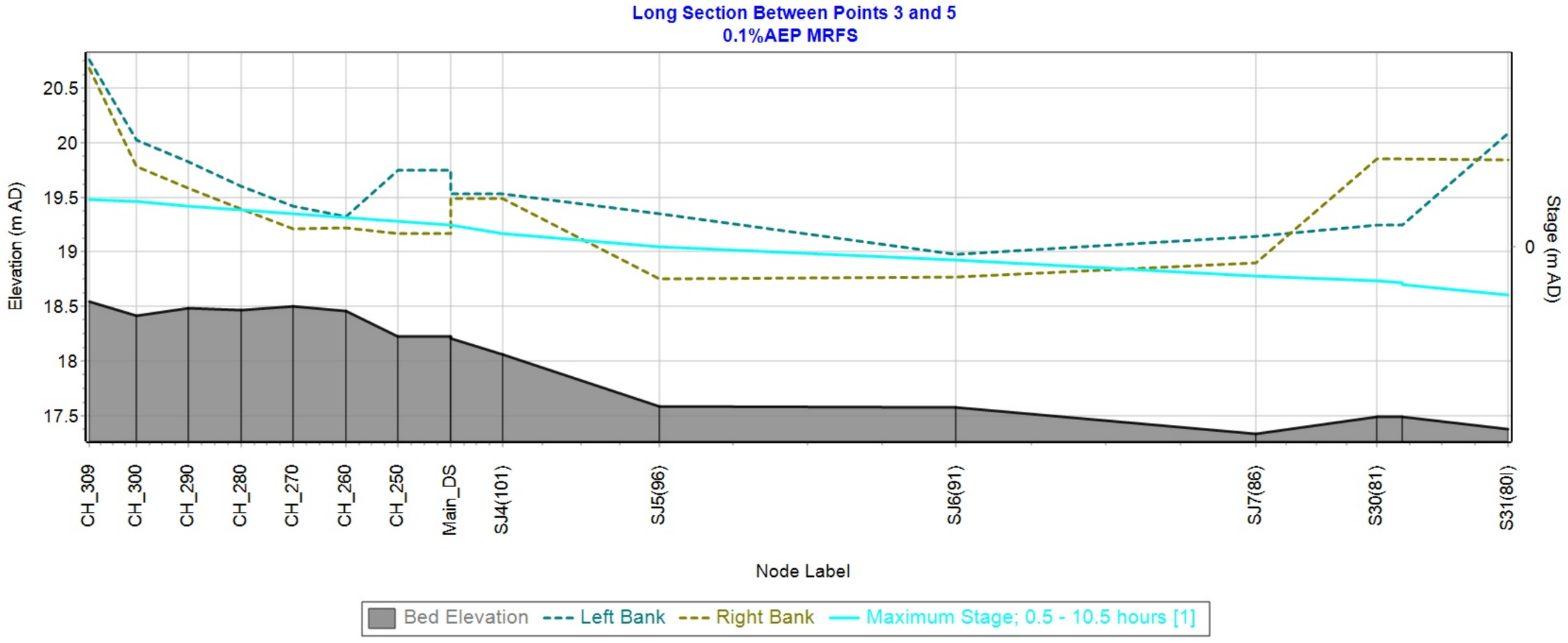

Long Section Between Points 2 and 4
Current Scenario 0.1%AEP
Elevation (m AD)
22.5
22
21.5
21
20.5
20
19.5
19
18.5
Stage (m AD)
0
CH_040
CH_050
CH_060
CH_070
CH_080
CH_090
CH_100
CH_110
CH_120
CH_130
CH_140
CH_150
CH_160
CH_170
CH_180
CH_190
CH_200
CH_210
CH_220
CH_230
Trib_DS
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]

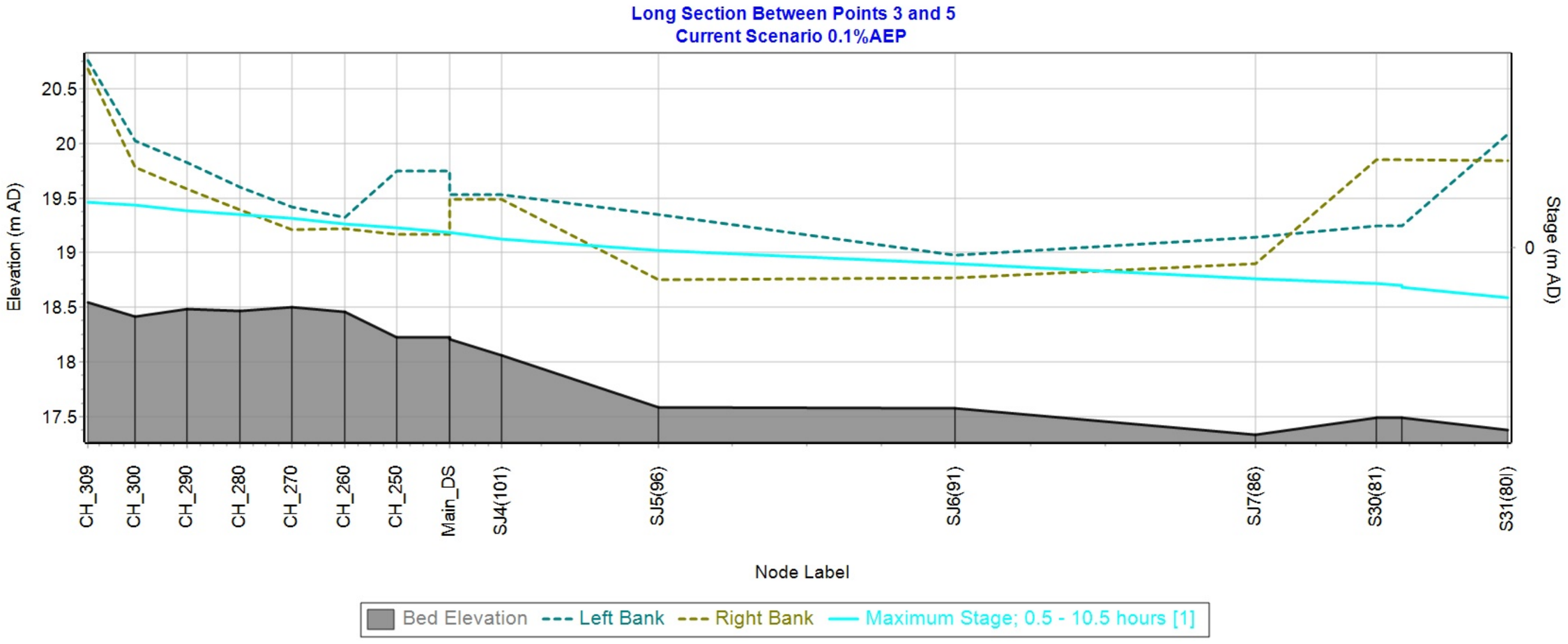

Long Section Between Points 3 and 5
1%AEP HEFS
Elevation (m AD)
20.5
20
19.5
19
18.5
18
17.5
Stage (m AD)
0
CH_309
CH_300
CH_290
CH_280
CH_270
CH_260
CH_250
Main_DS
SJ4(101)
SJ5(96)
SJ6(91)
SJ7(86)
S30(81)
S31(80)
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]


Long Section Between Points 3 and 5
1%AEP MRFS
Elevation (m AD)
20.5
20
19.5
19
18.5
18
17.5
Stage (m AD)
0
CH_309
CH_300
CH_290
CH_280
CH_270
CH_260
CH_250
Main_DS
SJ4(101)
SJ5(96)
SJ6(91)
SJ7(86)
S30(81)
S31(80)
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]

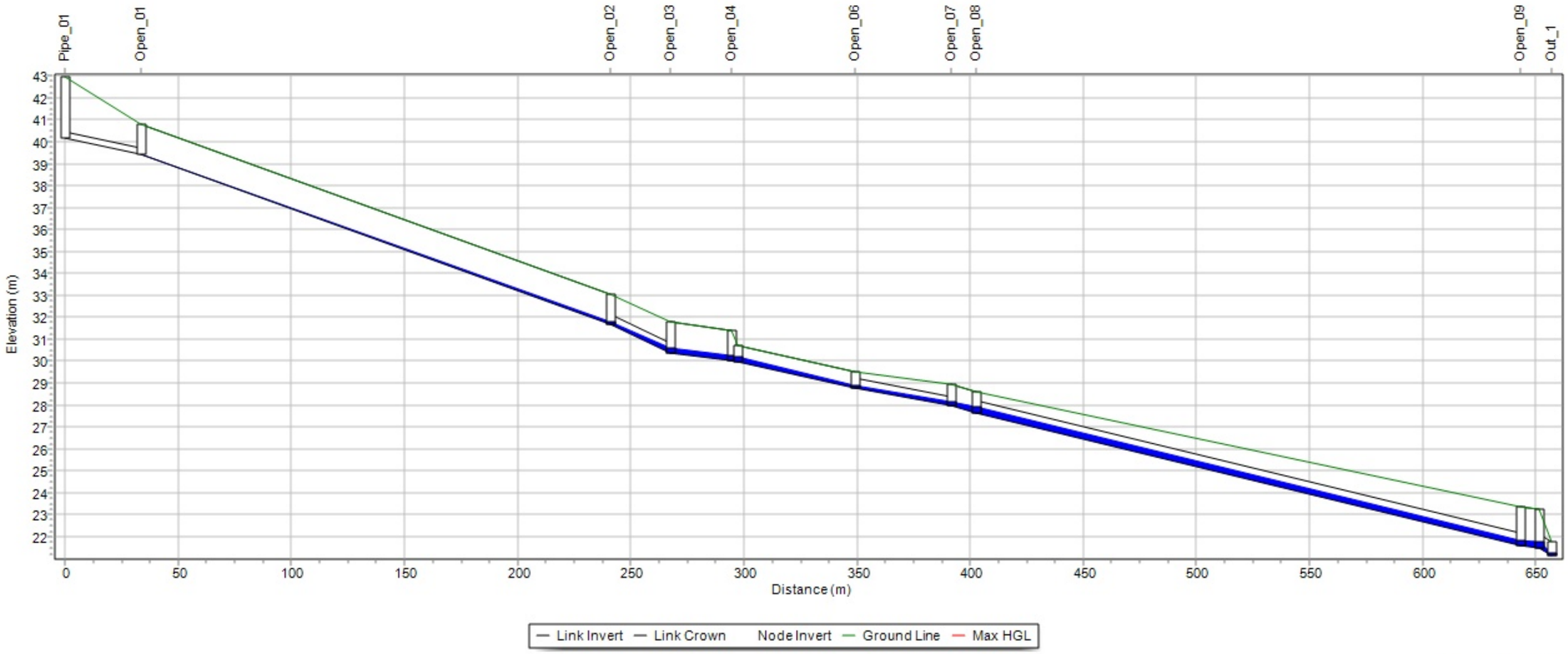

Long Section Between Points 3 and 5
Current Scenario 1%AEP
Elevation (m AD)
20.5
20
19.5
19
18.5
18
17.5
Stage (m AD)
0
CH_309
CH_300
CH_290
CH_280
CH_270
CH_260
CH_250
Main_DS
SJ4(101)
SJ5(96)
SJ6(91)
SJ7(86)
S30(81)
S31(80l)
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]


Long Section Between Points 3 and 5
0.1%AEP HEFS
Elevation (m AD)
20.5
20
19.5
19
18.5
18
17.5
CH_309
CH_300
CH_290
CH_280
CH_270
CH_260
CH_250
Main_DS
SJ4(101)
SJ5(96)
SJ6(91)
SJ7(86)
S30(81)
S30(81)b
S31(80)
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]


Long Section Between Points 3 and 5
0.1%AEP MRFS
Elevation (m AD)
20.5
20
19.5
19
18.5
18
17.5
Stage (m AD)
0
CH_309
CH_300
CH_290
CH_280
CH_270
CH_260
CH_250
Main_DS
SJ4(101)
SJ5(96)
SJ6(91)
SJ7(86)
S30(81)
S31(80)
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]

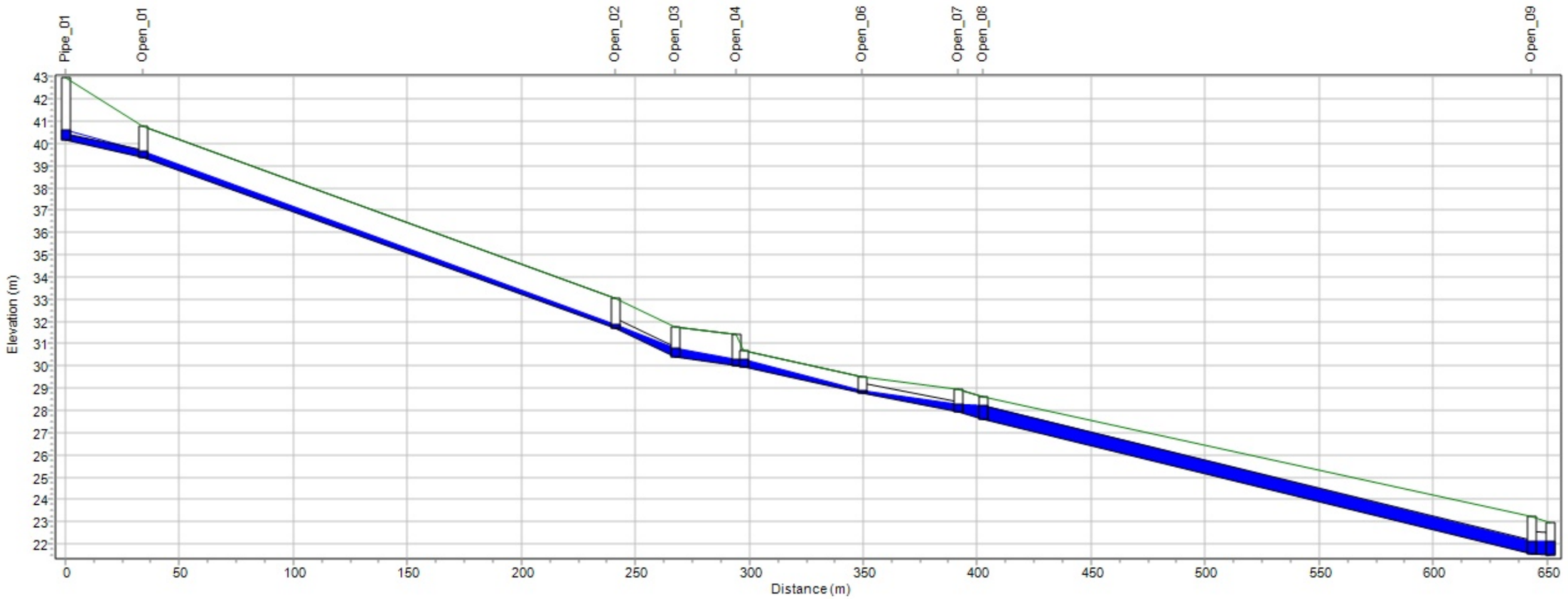

Long Section Between Points 3 and 5
Current Scenario 0.1%AEP
Elevation (m AD)
20.5
20
19.5
19
18.5
18
17.5
Stage (m AD)
0
CH_309
CH_300
CH_290
CH_280
CH_270
CH_260
CH_250
Main_DS
SJ4(101)
SJ5(96)
SJ6(91)
SJ7(86)
S30(81)
S31(80l)
Node Label
Bed Elevation
Left Bank
Right Bank
Maximum Stage; 0.5 - 10.5 hours [1]

Water Elevation Profile: Long Section Between Points 1 and 2
Current Scenario 1%AEP



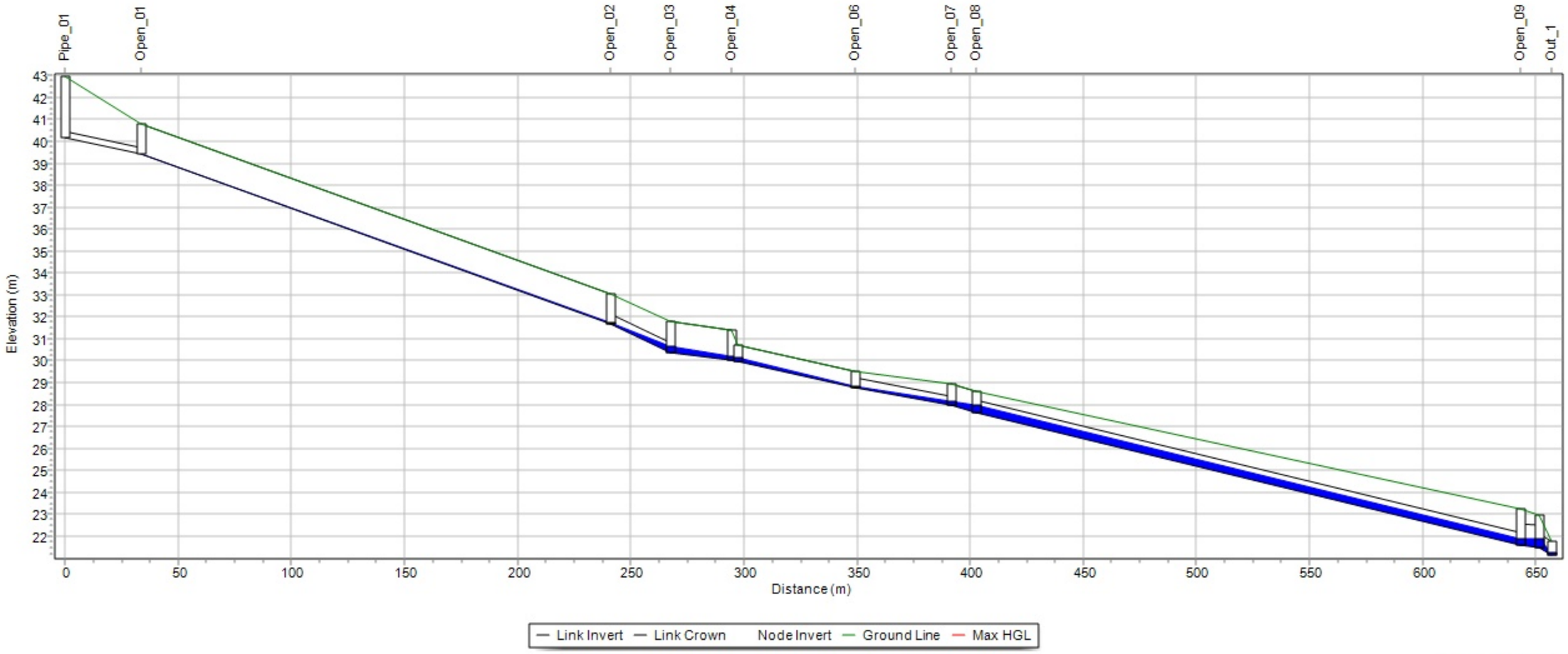
14/11/2024 00:15:00

Water Elevation Profile: Long Section Between Points 1 and 2
1%AEP HEFS



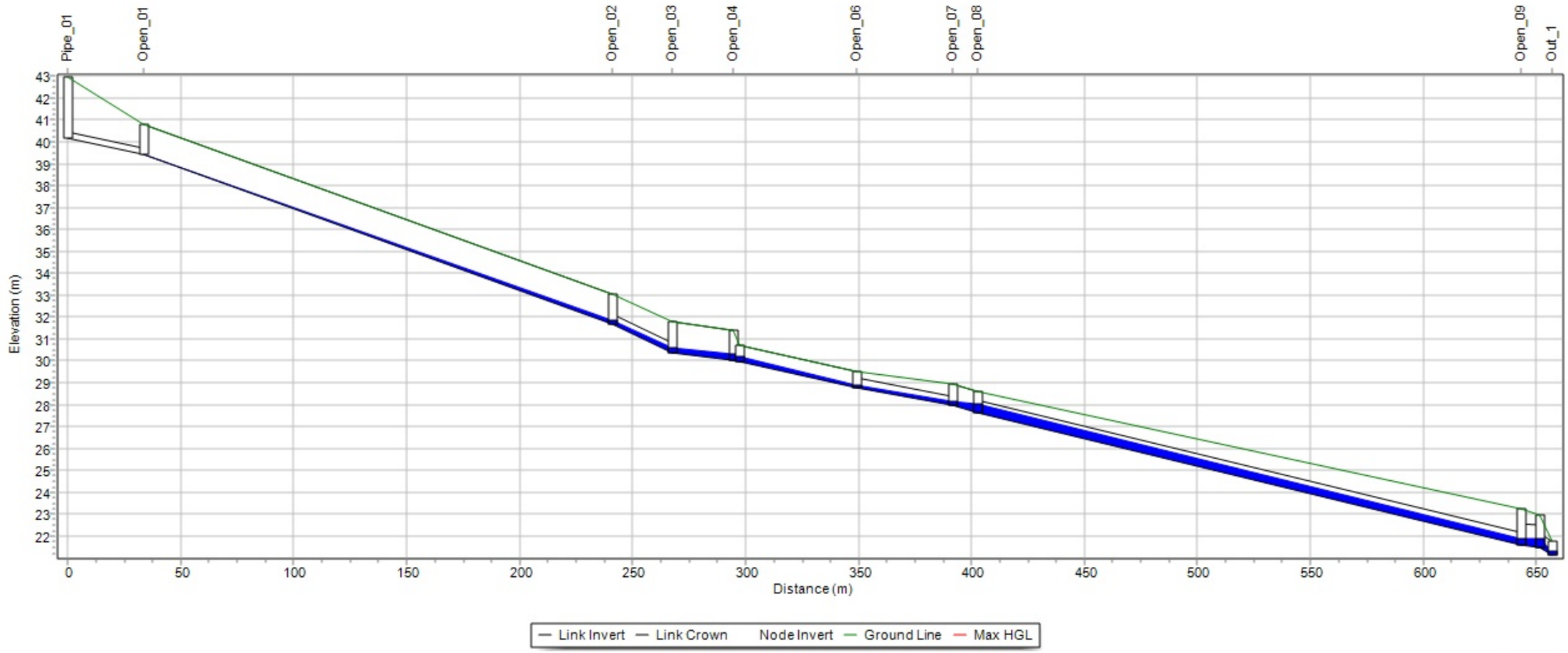
14/11/2024 05:00:00

Water Elevation Profile: Long Section Between Points 1 and 2
1%AEP MRFS



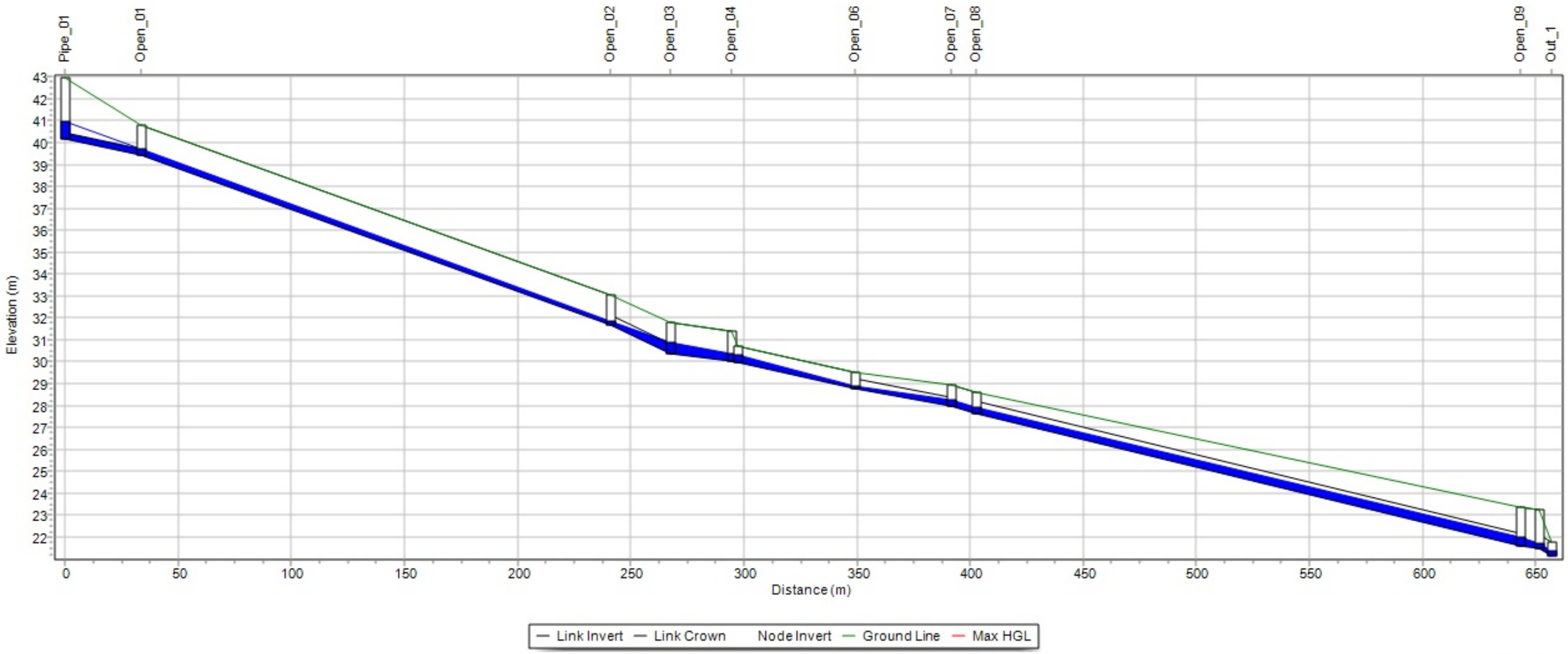
14/11/2024 00:15:00

Water Elevation Profile: Long Section Between Points 1 and 2
Current Scenario 0.1%AEP



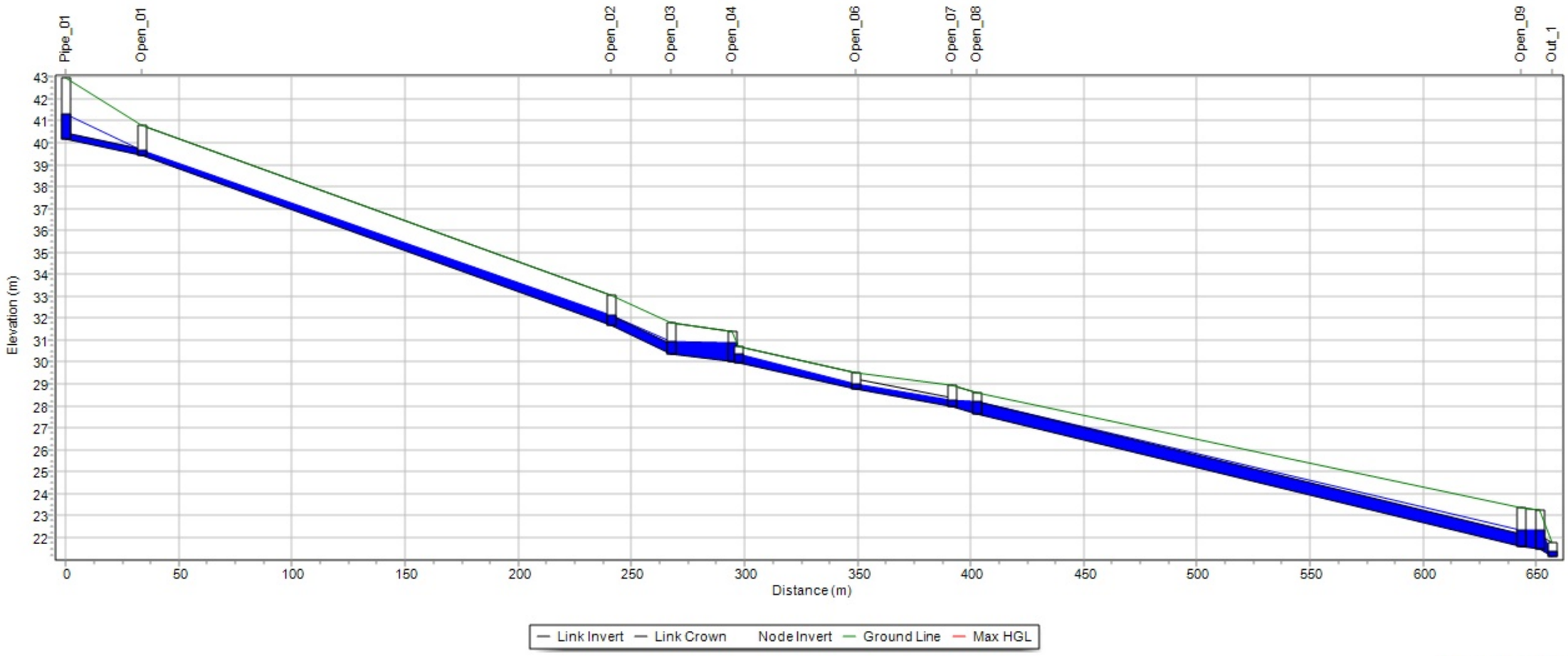
14/11/2024 00:15:00

Water Elevation Profile: Long Section Between Points 1 and 2
0.1%AEP HEFS



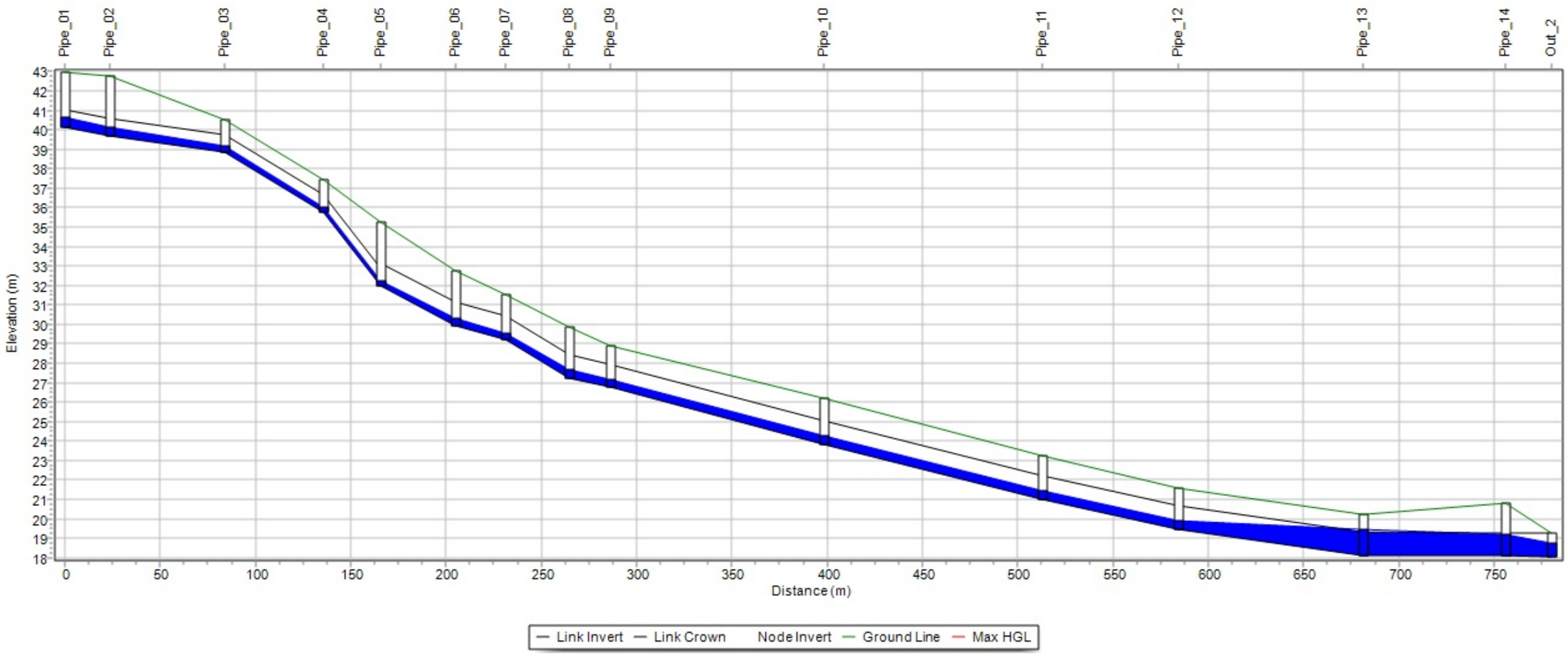
14/11/2024 05:00:00

Water Elevation Profile: Long Section Between Points 1 and 2
0.1%AEP MRFS



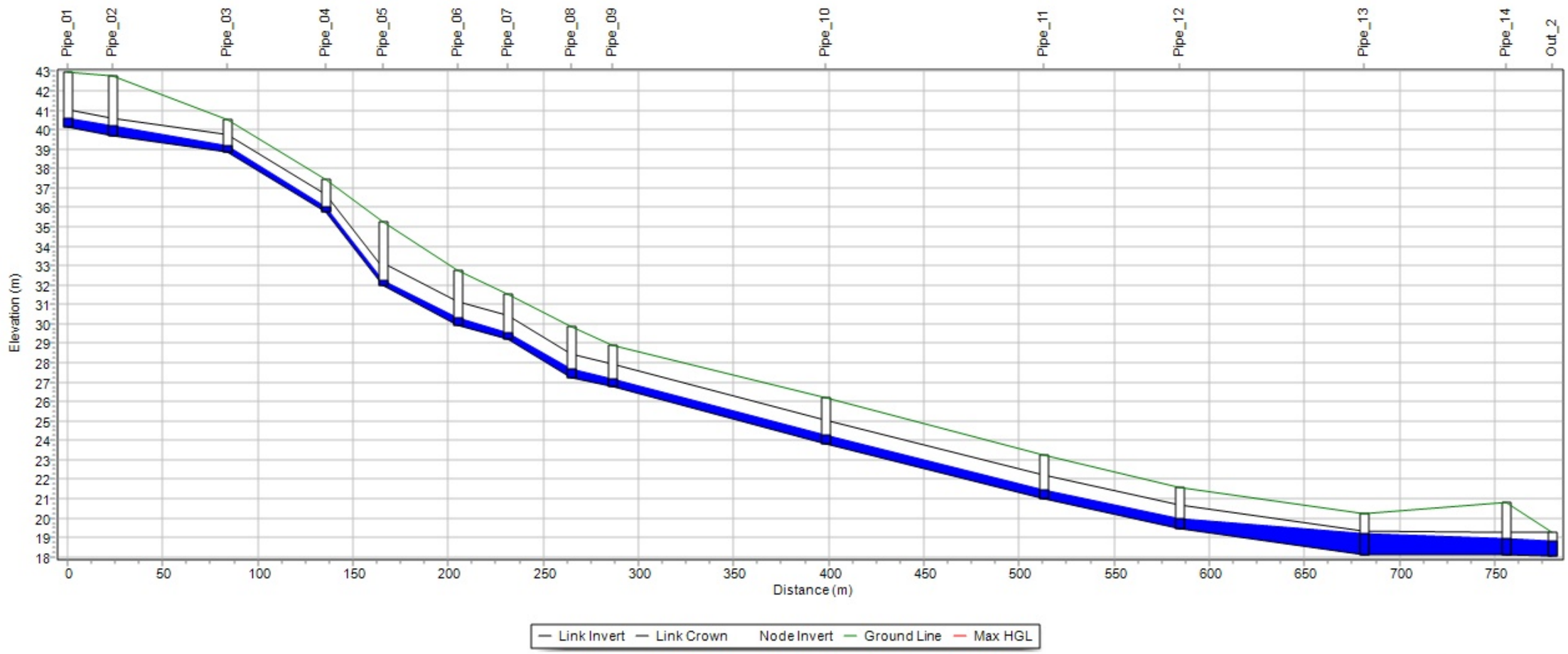
14/11/2024 05:00:00

Water Elevation Profile: Long Section Between Points 1 and 3
Current Scenario 1%AEP



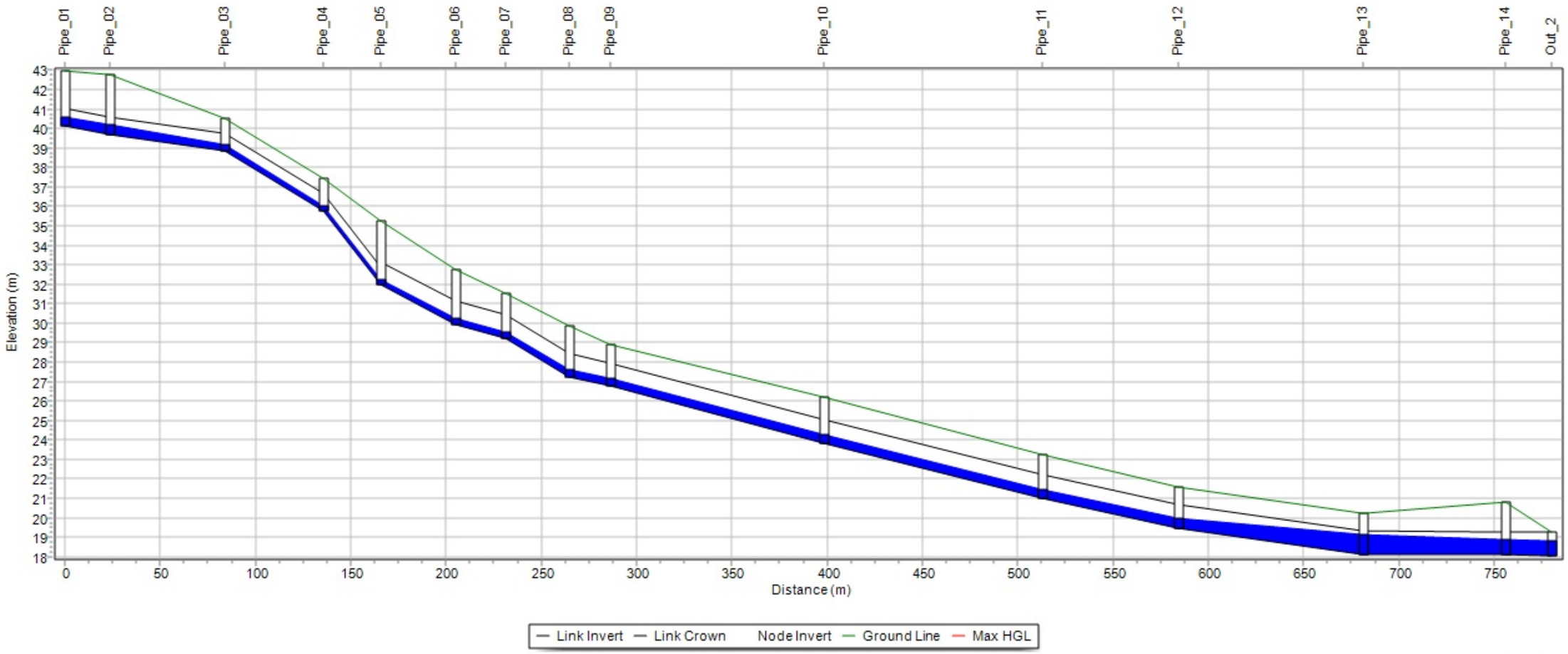
14/11/2024 05:00:00

Water Elevation Profile: Long Section Between Points 1 and 3
1%AEP HEFS



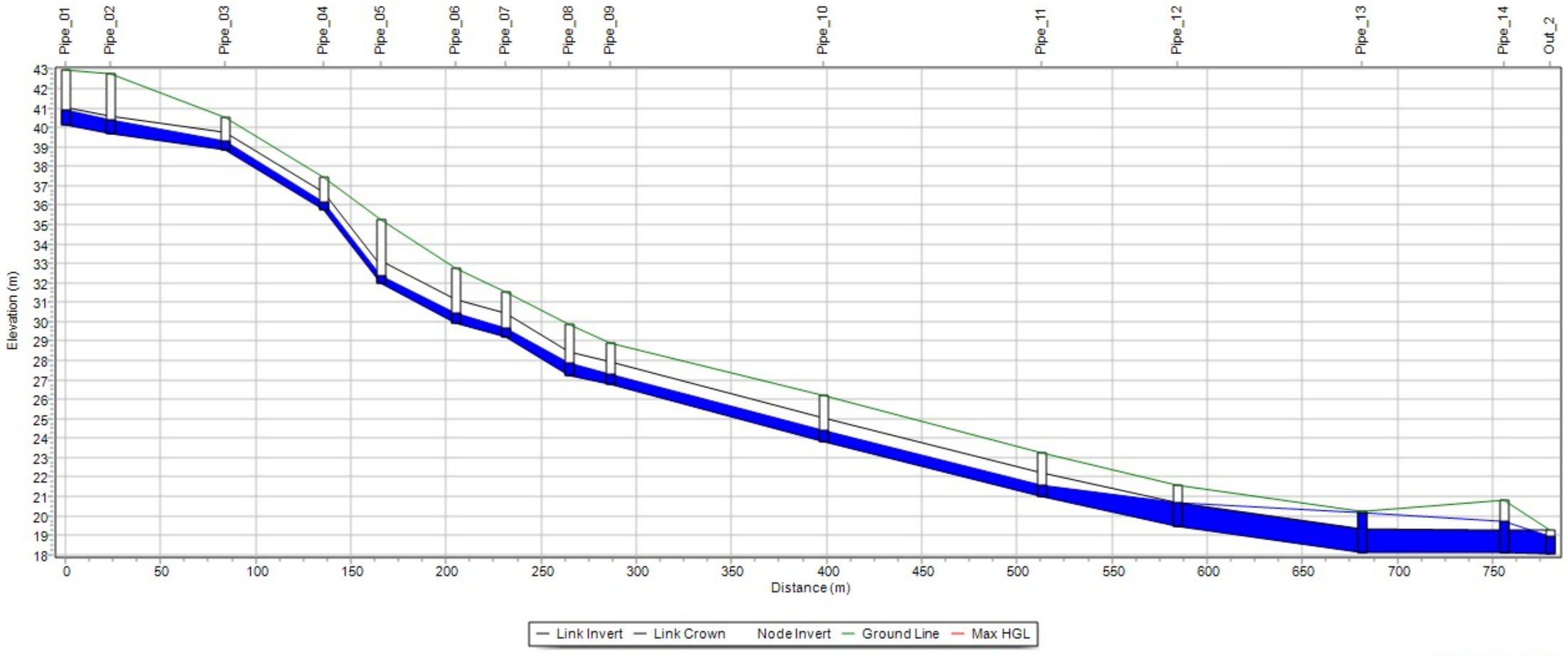
14/11/2024 05:00:00

Water Elevation Profile: Long Section Between Points 1 and 3
1%AEP MRFS



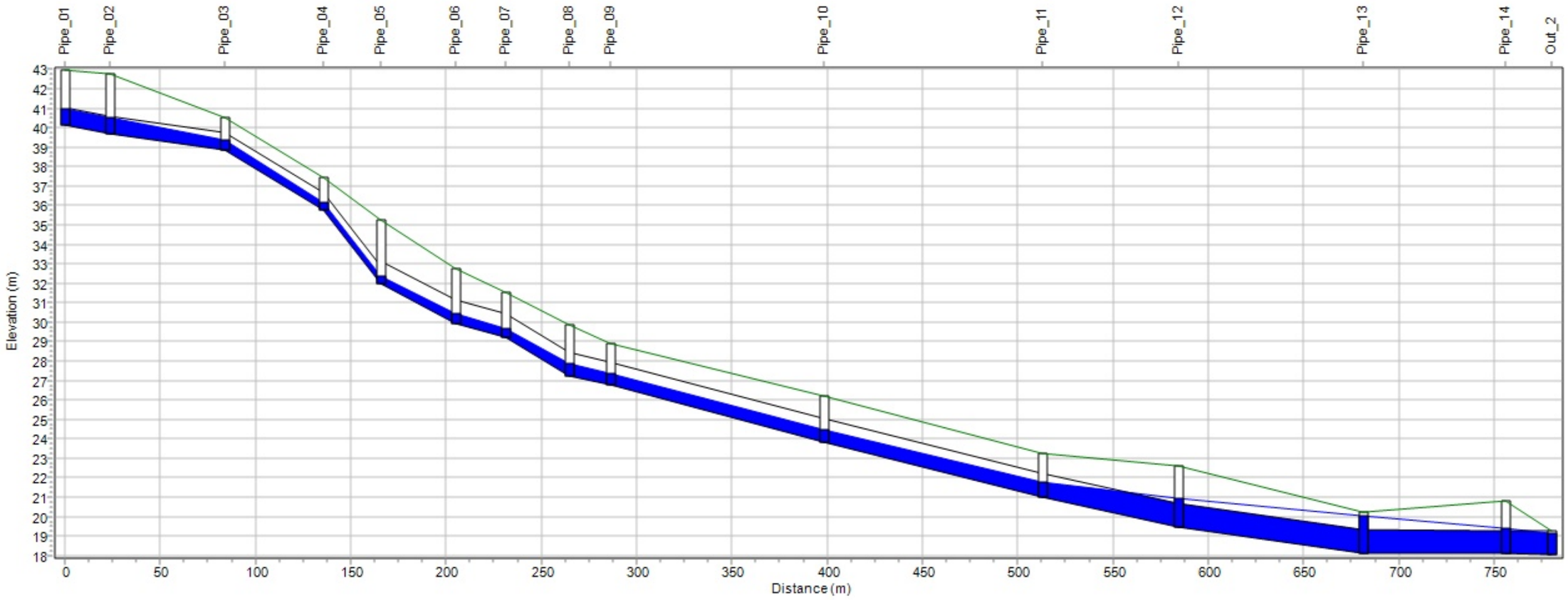
14/11/2024 05:00:00

Water Elevation Profile: Longsection Between Points 1 and 3
Current Scenario 0.1%AEP



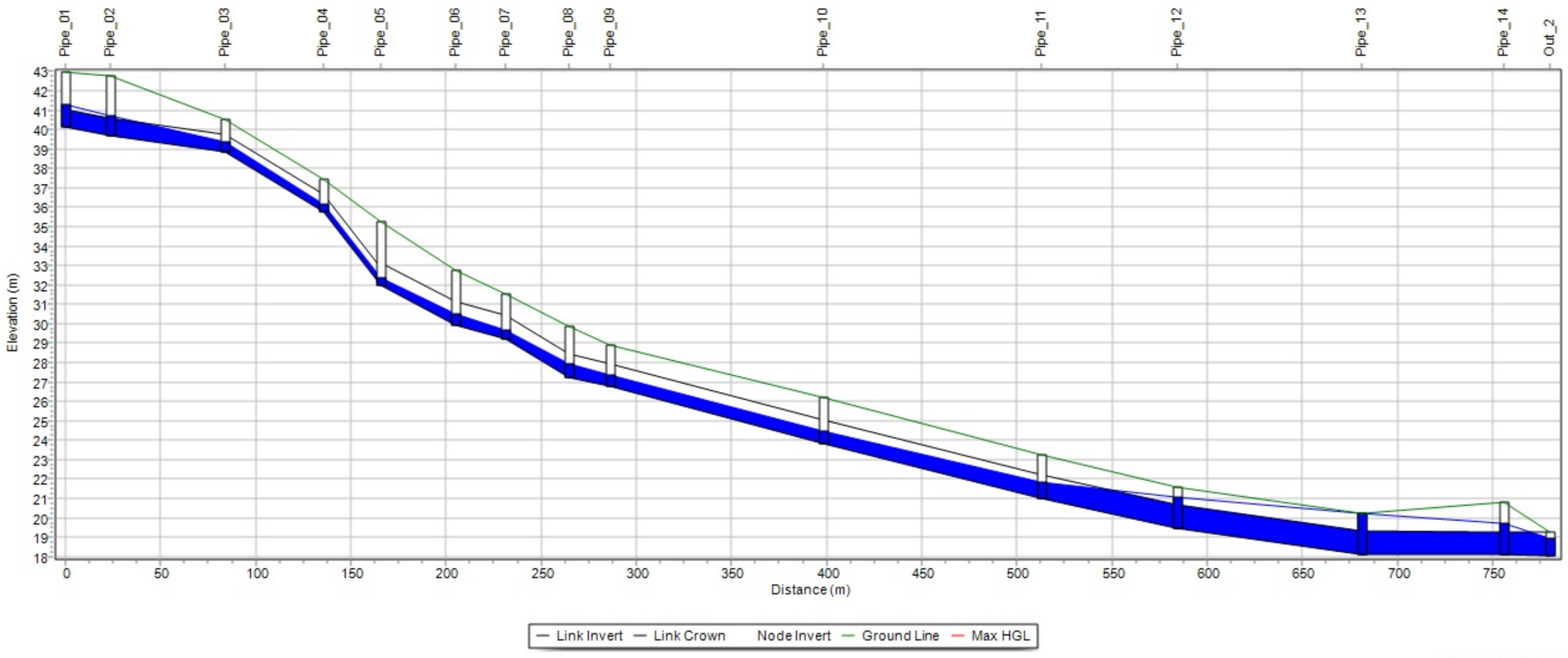
14/11/2024 05:00:00

Water Elevation Profile: Long Section Between Points 1 and 3
0.1%AEP HEFS



14/11/2024 05:00:00

Water Elevation Profile: Long Section Between Points 1 and 3
0.1%AEP MRFS



14/11/2024 05:00:00


Legend:
1D Urban Pipe
1D Urban Open Channel
1D River Channel
0.1% AEP Depth (m)
0.01 - 0.25
0.25 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2
>2m
0
75
150 m


Legend:
1D Urban Pipe
1D Urban Open Channel
1D River Channel
1%AEP HEFS Depth (m)
0.01 - 0.25
0.25 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2
>2m
0
75
150 m


Legend:
1D Urban Pipe
1D Urban Open Channel
1D River Channel
1%AEP MRFS Depth (m)
0.01 - 0.25
0.25 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2
>2m
0
75
150 m


Legend:
1D Urban Pipe
1D Urban Open Channel
1D River Channel
0.1%AEP HEFS Depth (m)
0.01 - 0.25
0.25 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2
>2m
0
75
150 m


Legend:
1D Urban Pipe
1D Urban Open Channel
1D River Channel
0.1%AEP MRFS Depth (m)
0.01 - 0.25
0.25 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2
>2m
0
75
150 m


Legend:
1D Urban Pipe
1D Urban Open Channel
1D River Channel
Current Scenario - 1%AEP Extent
Current Scenario - 0.1%AEP Extent
0
75
150 m


Legend:
1D Urban Pipe
1D Urban Open Channel
1D River Open Channel
MRFS - 0.1% AEP Extent With Embankment
HEFS - 0.1% AEP Extent With Embankment
0
75
150 m


Legend:
1D Urban Pipe
1D Urban Open Channel
1D River Open Channel
HEFS - 1%AEP Extent
HEFS - 0.1%AEP Extent
0
75
150 m


Legend:
1D Urban Pipe
1D Urban Open Channel
1D River Open Channel
MRFS_1%AEP Extent
MRFS_0.1%AEP Extent
0
75
150 m

Appendix 2: Statutory Planning Context

1. Introduction

This Appendix lists the main international, national, regional and local policy documents, guidelines and plans that have helped inform and guide the preparation of the Draft Local Area Plan. While comprehensive, this list is not exhaustive.

2. EU Level

- EU (2010) Flood Risk Directive (2010/60/EC)
- EU (2007) Floods Directive 2007 60/EC
- EU (2006) Groundwater Directive (GWD) 2006/118/EC
- EU (2001) Strategic Environmental Assessment Directive (2001/42/EC)
- EU (2000) Water Framework Directive (2000/60/EC)
- EU (1991) Habitats Directives (92/43/EEC)
- EU (1979) Birds Directive (79/409/EEC)

3. National Level

- DHLGH (2024) Ireland's 4th National Biodiversity Action Plan 2023–2030
- DHLGH (2024) Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities
- DHLGH (2024) River Basin Management Plan for Ireland, 2022-2027
- DRCD (2023) National Outdoor Recreation Strategy 2023-2027
- TII (2023) National Roads 2040
- DECC (2023) Climate Action Plan 2024
- NTA (2023) Cycle Design Manual (CDM)
- DHLGH (2022) National Housing Strategy for Disabled People, 2022 – 2027
- DHLGH (2022) Sustainable Urban Housing, Design Standards for New Apartments: Guidelines for Planning Authorities
- DOT (2022) National Sustainable Mobility Policy
- DRCD (2022) Town Centre First Policy
- DHLGH (2022) Strategic Environmental Assessment Guidelines for Regional Assemblies and Planning Authorities
- DHLGH (2022) Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas
- DHLGH (2022) Places for People, National Policy on Architecture
- Government of Ireland (2021) National Development Plan 2021-2030
- DECC (2021) National Energy and Climate Plan, 2021-2030
- DCEDIY (2019) Ready, Steady, Play: A National Play Policy
- DTCAGSM (2019) National Sports Policy 2018 – 2027
- DHPLG (2019) Design Manual for Urban Roads and Streets
- DOH (2019) Housing Options for Our Ageing Population: Policy Statement
- Government of Ireland (2018) Project Ireland 2040: National Planning Framework
- DHPLG (2018) Urban Development and Building Heights: Guidelines for Planning Authorities
- DT (2018) Strategy for the Future Development of National & Regional Greenways
- DECC (2018) National Climate Change Adaptation Framework
- HIQA (2016) National Standards for Residential Care Settings for Older People in Ireland
- DH (2016) National Physical Activity Plan
- NTA (2015) Permeability in Existing Urban Areas: Best Practice Guide
- DECLG (2013) Local Area Plans: Guidelines for Planning Authorities
- DECLG (2013) Manual for Local Area Plans
- DOECLG (2012) Planning and National Roads Guidelines for Planning Authorities
- DECLG (2012) Retail Planning: Guidelines for Planning Authorities
- DAHG (2011) Architectural Heritage Protection: Guidelines for Planning Authorities
- DEHLG & OPW (2009) The Planning System and Flood Risk Assessment: Guidelines for Planning Authorities
- DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities
- OPW (2009) The Planning System and Flood Risk Management
- Dublin Local Authorities (2005) Greater Dublin Strategic Drainage Study
- DOELG (2001) Childcare Facilities: Guidelines for Planning Authorities

4. Regional Level

- NTA (2022) Transport Strategy for the Greater Dublin Area, 2022-2042
- NTA (2022) Greater Dublin Area Cycle Network Plan
- SEAI & Codema (2021) Dublin Region Energy Masterplan
- EMRA (2019) Regional Spatial and Economic Strategy 2019-2031
- OPW (2016) The Eastern Catchment Flood Risk Assessment and Management (CFRAM) Study
- DMERA (2008) Retail Strategy for the Greater Dublin Area

5. Local Level

- Dún Laoghaire-Rathdown County Council (2025) dlr Corporate Plan 2025-2029
- Dún Laoghaire-Rathdown County Council (2024) Old Connaught Area-based Transport Assessment (ABTA)
- Dún Laoghaire-Rathdown County Council (2024) dlr Tourism and Marketing Strategy 2024 – 2028
- Dún Laoghaire-Rathdown County Council (2024) dlr Traveller Accommodation Programme 2025-2029
- Dún Laoghaire-Rathdown County Council (2024) Trees and Urban Forestry Strategy 2024-2030
- Dún Laoghaire-Rathdown County Council (2024) dlr Play Policy 2023-2028
- Dún Laoghaire-Rathdown County Council (2024) dlr Climate Change Action Plan, 2024-2029
- Dún Laoghaire-Rathdown County Council (2023) Dún Laoghaire-Rathdown Local Economic and Community Plan, 2023-2028
- Dún Laoghaire-Rathdown County Council (2022) Dún Laoghaire-Rathdown County Development Plan, 2022-2028
- Dún Laoghaire-Rathdown County Council (2022) dlr Age Friendly Strategy, 2022-2026
- Dún Laoghaire-Rathdown County Council (2021) dlr Biodiversity Action Plan, 2021-2025
- Dún Laoghaire-Rathdown County Council (2021) dlr County Heritage Plan, 2021-2025
- Dún Laoghaire-Rathdown County Council (2020) Community Facilities Planning Toolkit
- Dún Laoghaire-Rathdown County Council (2017) Sports Facility Strategy 2017-2022

Appendix 3: List of Draft LAP Policies and Objectives

Chapter 3: Climate Action

i. Policies:

Section	Section Title	Policy No.	Policy Title	Policy Text
3.3	**Low Carbon and Climate Resilient Community**	OCLAP1	Low Carbon and Climate Resilient Community	It is Policy to progress the development of Old Connaught as a low carbon and climate resilient community.

Chapter 4: Spatial Strategy and Site Development Frameworks

i. Policies:

Section	Section Title	Policy No.	Policy Title	Policy Text
4.4.2	**Site Development Frameworks**	OCLAP2	Site Development Frameworks	It is Policy that future development shall accord with the objectives, as applicable, set out in the Site Development Frameworks. Planning applications shall include a 'Consistency Statement' setting out how each of the objectives in the Site Development Framework will be delivered. All planning applications shall demonstrate how the respective proposal for development will facilitate and achieve full integration with adjoining landholdings and the objectives for these landholdings as set out in the Site Development Frameworks.
4.4.3	**Urban Design and Placemaking**	OCLAP3	Urban Design	It is Policy to promote a high standard of urban design throughout Old Connaught in accordance with the relevant policies set out in the County Development Plan, Section 28 Guidelines and other relevant guidance documents including: the 'Compact Settlement Guidelines' (2024), and the Design Manual for Urban Roads and Streets (2019). Development shall be design-led, prioritising place making and be informed by the Key Indicators of Quality Design and Placemaking set out in the 'Compact Settlement Guidelines' (2024).
		OCLAP4	Public Realm	It is Policy that new development provides connected, attractive, interesting and well used public realm and open spaces using place making and urban design principles, creating pedestrian centred environments with active, inviting public spaces and parks.

ii. Objectives:

Section	Section Title	Objective No.	Objective Title / Header	Objective Text
4.3.1	**Land Use**	SDF1	Land Uses	It is an objective that future development shall accord with the land uses identified in Figure 4.2, and any additional more detailed provisions set out in the Site Development Frameworks (see Section 4.4).
4.4.2	**Site Development Frameworks**	SDF2	Masterplan	It is an Objective that a Masterplan is prepared by the Applicant(s) for significant development within each Character Area, for lands within the Applicant's ownership. The Masterplan shall accord with the objectives set out in the SDFs and be accompanied by a 'Consistency Statement' detailing how each of the objectives, where applicable, are to be achieved. The Masterplan shall include details of how the overall scale of development is to be delivered in accordance with the phasing and implementation strategy set out in Chapter 11.

Chapter 5: Sustainable Urban Village

i. Policies:

Section	Section Title	Policy No.	Policy Title	Policy Text
5.2.1	**Sustainable Neighbourhood Infrastructure**	OCLAP5	Provision of Sustainable Neighbourhood Infrastructure Uses and Delivery of the 10-minute Neighbourhood Concept	It is Policy to support the delivery of sufficient SNI uses including community and educational uses that will be required to ensure sustainable living - in line with the 10-minute neighbourhood concept - for existing and future residents of the Draft Plan area, in accordance with Policy Objectives PHP1, PHP2, PHP3 and PHP4 in the dlr County Development Plan 2022-2028.
		OCLAP6	Co-Location of Sustainable Neighbourhood Infrastructure Uses	It is Policy to encourage the co-location of existing and future sustainable neighbourhood facilities including community centres, schools, childcare facilities, healthcare services and also co-location of playgrounds and amenity spaces in accordance with Policy Objective PHP5 in the dlr County Development Plan 2022-2028. Such an approach may enable the sharing of facilities such as car and cycle parking.
5.2.1.1	**Education**	OCLAP7	School Facilities	It is Policy to: • Promote and support – in line with Policy Objective PHP7 of the dlr County Development Plan 2022-2028 - the use and access to school facilities including assembly halls, sporting and recreation facilities within school grounds outside of school teaching hours, at weekends and during school holidays by the wider community in order to augment the level of meeting space and sporting and recreational facilities available within the Draft Plan area. • Promote the sharing of outdoor recreational facilities between the local community and local schools, including the sharing of public open space provision with schools.
		OCLAP8	Future School Provision	It is Policy to continue to liaise with the Department of Education to progress the phased delivery of school facilities to support residential growth in the Old Connaught and wider area.
5.2.1.2	**Community Facilities**	OCLAP9	New Community Facilities	It is Policy to provide an equitable and accessible distribution of community facilities to support the sustainable development of the Draft Plan area. Two preferred locations are identified for the provision of community infrastructure across the LAP area. The primary location for community infrastructure is identified at the proposed Allies River Road Active Park and a secondary location is identified adjacent to the Old Connaught Village Green. In addition to these preferred locations, the provision of additional and supplementary community facilities may be considered at other suitable locations at Old Connaught.
5.2.1.3	**Childcare**	OCLAP10	Childcare Facilities	It is Policy to support and facilitate the provision of childcare facilities within the Draft Plan area to ensure that existing and future residential population have access to childcare services. In this regard: • All planning applications for larger residential developments to be required to provide one childcare facility (equivalent to a minimum of 20 child places) for every 75 dwelling units, unless it can be satisfactorily demonstrated that there is already an adequate provision in the area. • At least one childcare facility shall be provided within lands identified for a neighbourhood centre within the Draft Plan. • At least one childcare facility shall be provided within each Character Area identified within the Draft Plan, see Figure 4.4. The provision of childcare facilities within the Draft Plan area shall be carried out in accordance with the provisions set out under Policy Objective PHP6 'Childcare Facilities' and Section 12.4.10 'Childcare Facilities – Parking & Access' of the County Development Plan 2022-2028 and/or any subsequent plan and the provisions of the DoEHLG 'Childcare Facilities Guidelines for Planning Authorities' (2001) or any updated Guidelines.
		OCLAP11	Co-location of Childcare Facilities	It is Policy to support and facilitate the co-location of childcare provision with public spaces, schools, and/or other community facilities in the Draft Plan area.

5.2.1.4	**Healthcare**	OCLAP12	Healthcare Facilities	It is Policy to support and facilitate the provision of healthcare facilities within the Draft Plan area including at lands identified for a neighbourhood centre.
		OCLAP13	Nursing Home Facilities	It is Policy to support and facilitate the provision of nursing homes and/or assisted living accommodation within the Draft Plan area and to require that such developments meet the standards set out in Section 12.4.8.2 'Nursing Homes / Assisted Living Accommodation' of the County Development Plan 2022- 2028 and the 'National Standards for Residential Care Settings for Older People in Ireland' (HIQA 2016).
5.2.1.5	**Inclusion**	OCLAP14	Universal Design	It is Policy to promote Universal Design in all proposals for community facilities and publicly accessible buildings and spaces in order to ensure that all buildings and associated public realm can be utilised to the greatest extent possible by all people, regardless of age, ability or disability. In this regard, proposed development should have regard to the provisions of 'Building for Everyone: A Universal Design Approach' series of booklets by the National Disability Authority and Centre of Excellence in Universal Design.
		OCLAP15	Changing Places Bathrooms	It is Policy to promote, support and facilitate the roll out of changing places bathrooms in line with Policy Objective PHP17 of the dlr County Development Plan 2022 – 2028, including at lands identified for a neighbourhood centre and at Allies River Road Active Park.
		OCLAP16	Age Friendly Strategy	It is Policy to support and facilitate the 4 Strategic Priorities set out within the dlr Age Friendly Strategy 2022-2028, in particular Strategic Priority 1. In this regard: • Public realm should seek to facilitate social interaction and healthy lifestyles. • Safe and accessible transport and infrastructure will be promoted (see Chapter 6). • Lifetime adaptable housing options will be facilitated (see Section 5.3.4.4).
5.3.4.1	**Residential Density**	OCLAP17	Plan-Led Approach to Residential Density	It is Policy to: • Promote and support residential densities in line with Policy Objective PHP18 of the dlr County Development Plan 2022 – 2028 (or any subsequent Plan) and the 'Sustainable Residential Development and Compact Settlements Guidelines', 2024. • Provide a plan-led approach to residential density standards within the Draft Plan area. In this regard, residential density shall generally accord with the standards set out in Section 4.3.2 'Residential Density' and Figure 4.2 and further detailed in Section 4.4.2 'Site Development Frameworks', both included in Chapter 4 – Spatial Strategy and Site Development Frameworks. • Minor deviations from the residential density standards set out in Section 4.3.2 'Residential Density' may be considered by the Planning Authority on a case-by-case basis to allow for a range of potential design solutions. • Residential density at lands including regeneration and infill sites will be assessed on a case-by-case basis by the Planning Authority. Such sites may define their own density (as agreed by the Planning Authority) in response to inter alia the scale and form of surrounding development.
5.3.4.2	**Building Heights**	OCLAP18	Building Height	It is Policy that building heights in Old Connaught shall generally be in accordance with the height parameters set out in Section 4.3.3 'Building Heights' and further detailed in Section 4.4.2 'Site Development Frameworks', both included in Chapter 4 – Spatial Strategy and Site Development Frameworks. Having regard to SPPR3 in the Section 28 Building Height Guidelines (2018), there may be instances where an argument can be made for increased height. In circumstances where compliance with Policy Objective BHS2 of the dlr County Development Plan 2022-2028 (see Appendix 5) can be demonstrated additional height may be appropriate, subject to complying with; the safeguards outlined in the CDP, the policies and objectives of this Draft Plan and the performance-based criteria set out in Table 5.1 of the dlr Building Height Strategy (see Appendix 5 of the dlr County Development Plan 2022-2028).
5.3.4.3	**Residential Mix**	OCLAP19	Residential Mix	It is Policy that all new residential developments within the Draft Plan area shall accord with the mix requirements set out in Policy Objective PHP27: Housing Mix and Section 12.3.3.1 of the dlr County Development Plan 2022-2028. In this regard, all planning applications for residential development within the Draft Plan area shall provide for a suitable mix of house types and sizes that meet the needs of a

				range of households and should incorporate flexible housing units that can be adapted to suit changing household needs.
5.3.4.4	**Housing Options**	OCLAP20	Housing Options	It is Policy to support and promote housing options for older people and persons with a disability within the Draft Plan area, including purpose-built accommodation and housing options that meet specific needs in accordance with Policy Objective PHP30 in the dlr CDP 2022-2028. In this regard, new residential developments shall be required to incorporate an appropriate quantum of housing units that: • Promote aging in place opportunities for older persons to 'right size' within their community. • Take account of all abilities through the principles of universal homes design. • Facilitate adaptable layouts to suit changing needs. • Any proposed development for purpose-built accommodation for a specific need or group shall demonstrate how this objective can be secured long-term.
5.3.4.6	**Council Owned Lands**	OCLAP21	Social and Affordable Housing	It is Policy: • To support the delivery and integration of social and affordable housing within the Draft Plan area and to pursue further opportunities for social and affordable housing in an integrated manner, through 'Part V' housing, Council own build, Affordable Housing schemes and/or delivery through Approved Housing Bodies, in accordance with Policy Objective PHP31 in the dlr County Development Plan 2022-2028 and the Council's Housing Strategy and HNDA. • To support new and innovative ways to meet housing demands in the Plan area while also ensuring that there is an appropriate mix of tenure and dwelling types provided to meet the needs of the current and future residents of Old Connaught.
5.3.4.7	**Traveller Accommodation**	OCLAP22	Traveller Accommodation	It is a policy to implement the dlr Traveller Accommodation Programme 2025-2029 (or any subsequent Programme), including for the provision of Traveller accommodation at Old Connaught Avenue.
5.4.5	**Multi-Functional Neighbourhood Centres**	OCLAP23	Multi-Functional Neighbourhood Centre	It is Policy to provide an appropriate multifunctional neighbourhood centre at Old Connaught having regard to the findings of the Floorspace Capacity Assessment set out in Section 5.4.4. • The Neighbourhood Centre located in the Village Core (see Section 4.4.4) will comprise the primary multi-functional centre located within the LAP area and should, at a minimum, provide for the retail and service use needs associated with the current A1 zoned lands. • The Neighbourhood Centre shall ensure a high quality and attractive civic environment and provide a sense of both place and vitality which also optimises active travel movement and access to public transport. • Development of the Neighbourhood Centre shall be generally consistent with the provisions set out in the Site Development Framework for the Old Connaught Village Core – see Chapter 4. • Having regard to the fluid and evolving nature of retail and service provision, including changing shopping trends, the potential future development of lands identified as a Strategic Land Reserve for residential purposes will be subject to an assessment of additional retail and service floorspace need undertaken through the development management process. The outcome of the assessment will have particular regard to achieving inter alia the 10-minute neighbourhood concept.

ii. Objectives:

Section	Section Title	Objective No.	Objective Title / header	Objective Text
5.2.1.1	**Education**	SUV1	Education Facilities	It is an Objective: • To retain and/or improve existing education provision within the Draft Plan area. • To reserve lands for future education use within the Central Character Area and Northern Character Area as identified in Figure 5.1.

Section	Section Title	Objective No.	Objective Title / header	Objective Text
				• To promote the use of urban typologies in the design of any education facilities. • That the dual function of sports facilities/halls etc. outside of school hours will be encouraged where the use of such facilities will be of a benefit to the wider community, however any outside hour's usage of the school should not be to the detriment of adjoining residential amenities.
5.3.4.4	**Housing Options**	SUV2	Housing for All	It is an Objective to ensure the provision of a range of housing options within the Draft Plan area, that take account of all ages and abilities as residents progress through different stages of life, that all new residential developments of 10+ units shall include a minimum of 25% of the total housing stock that is designed to facilitate an ageing population / people with a disability. In this regard, the following provisions should be taken into account in the design and location of such units: • Units should be designed having regard to the universal design homes principles. • Insofar as possible, units should be located at ground floor level with own door access. • Ideally, units should be located where residents have a short walk to site entrances that adjoin public transport links and amenities within or adjacent to the proposed development. • To assist with ease of access to public transport links and amenities, landscaping within any new development shall be designed having regard to ease of movement and legibility for all users.
		SUV3	Communal Facilities	In line with the Section 28 Guidelines 'Sustainable Urban Housing: Design Standards for New Apartments', the Planning Authority will encourage provision of accessible communal rooms and/or facilities for the use of future residents in new residential apartment developments of 50+ units. Such communal facilities should have regard to the needs of all future residents of all ages and abilities. Where such facilities are to be provided, details of the management shall be submitted and agreed by the Planning Authority at application stage.
5.4.6	**Employment**	SUV4	Remote Working Hub	It is an Objective to facilitate the development of a small-scale remote working hub at the neighbourhood centre lands to support a reduction in commuting distances and provide for workers who may want to gain access to office space outside of the home.

Chapter 6: Transport and Movement

i. Policies:

Section	Section Title	Policy No.	Policy Title	Policy Text
6.3.1	**Project Ireland 2040**	OCLAP24	N11/M11 Upgrades	It is Policy to co-ordinate and co-operate with Transport Infrastructure Ireland, the Department of Transport, the National Transport Authority and Wicklow County Council to progress the N11/M11 Junction 4 to Junction 14 Improvement Scheme and/or the N11/M11 Bus Priority Interim Scheme, as appropriate.
		OCLAP25	Motorway and National Routes	It is Policy to protect motorways and national routes and associated junctions in accordance with the Section 28 Guidelines 'Spatial Planning and National Roads' (2012). The Council will protect the preferred route corridor of the N11/M11 Junction 4 to Junction 14 Improvement Scheme and prohibit development that could prejudice its future delivery.
6.3.3	**Spatial Planning and National Roads Guidelines for Planning Authorities (2012)**	OCLAP26	Spatial Planning and National Roads	It is Policy that future transport development in the Draft Plan area shall have regard to the requirements of the Spatial Planning and National Roads Guidelines to protect the National Road Network.
6.3.4	**Transport Strategy for the Greater Dublin Area 2022-2042**	OCLAP27	Luas Green Line Extension	It is Policy to support the extension of the Luas Green Line southwards in order to serve the Bray and Environs area.

6.3.6	**EMRA Regional Spatial and Economic Strategy 2019-2031**	OCLAP28	Co-ordination with Transport Agencies	It is Policy to continue to co-ordinate and co-operate, as appropriate, with Wicklow County Council and the relevant transport agencies to facilitate the delivery of key enabling transport infrastructure and services to support the sustainable development of Old Connaught.
6.5	**Overarching Transport Policies**	OCLAP29	Integration of Land Use and Transport	It is Policy to actively support sustainable modes of transport at Old Connaught and ensure that land uses are aligned with the provision and development of high-quality public transport systems.
		OCLAP30	10 Minute Neighbourhood Concept	It is Policy to promote and facilitate the '10-minute' settlement concept at Old Connaught where a range of facilities and services are accessible in a short walking and cycling timeframe from homes or are accessible by high quality public transport located within a short walk from home.
		OCLAP31	Modal Shift	It is Policy to provide an environment which supports moving people from the private car to more sustainable modes.
		OCLAP32	Delivery of Enabling Transport Infrastructure	It is Policy to support the delivery of enabling transport infrastructure in a planned and sequential manner in accordance with the Phasing Strategy set out in Chapter 11 – Phasing and Implementation.
		OCLAP33	Environmental Assessment of Transport Infrastructure	It is Policy that, where appropriate, proposed transport infrastructure projects, that are not already permitted or provided for by existing plans/programmes/etc. which have been subject to environmental assessment, will be subject to the undertaking of a Corridor and Route Selection Process in two stages: Stage 1 – Route Corridor Identification, Evaluation and Selection; and Stage 2 – Route Identification, Evaluation and Selection. The detail associated with such projects referred to in this Draft Plan is non-binding and indicative.
6.6.2.2	**Cycle Parking Facilities**	OCLAP34	Cycle Parking	It is Policy to provide high quality cycle parking and cycle storage facilities across the Old Connaught LAP area in accordance with inter alia the provisions of the dlr County Development Plan 2022-2028 and the Sustainable Residential Development and Compact Settlements Guidelines (2024).
6.6.3	**Public Transport Network**	OCLAP35	Bus Priority Measures	It is Policy to facilitate and promote bus priority measures, where required, across the Draft Plan area.

ii. Objectives:

Section	Section Title	Objective No.	Objective Title / header	Objective Text
6.5	**Overarching Transport Policies**	TM1	Universal and Inclusive Design	It is an Objective to ensure that future transport infrastructure within the Draft Plan area is designed to be accessible to all. The following guidance in particular should be referred to: • Design Manual for Urban Roads and Streets (DMURS). • Centre for Excellence in Universal Design (National Disability Authority). • Age-Friendly Ireland.
6.6.1	**Transport Strategy - Overview**	TM2	Old Connaught Transport Strategy	It is an Objective to implement the proposed transport infrastructure illustrated in Figures 6.12, 6.13 and 6.14 (as additionally illustrated in Figures 6.15, 6.18 and 6.20) to facilitate access to and within the area by all travel modes.
6.6.2	**Active Travel Infrastructure**	TM3	Active Travel Network	It is an Objective: • To provide a plan-led approach to the delivery of a connected active travel network across the Draft Plan area. Subject to detailed design, the intended routing, function and purpose of the active travel network (as illustrated in Figures 6.12 and 6.15) shall, where practicable, be achieved. Further details with regards to the proposed active travel network is set out in Chapter 4 – Spatial Strategy and Site Development Frameworks, and Chapter 11 – Phasing and Implementation. • That as part of the development management process, proposals for new development in the Draft Plan area must demonstrate how the proposal positively contributes to the proposed network of pedestrian and cycle linkages within the Draft Plan area.

Section	Section Title	Objective No.	Objective Title / header	Objective Text
				• That deviations from the proposed active travel network, a illustrated in Figures 6.12 and 6.15, may be considered by the Planning Authority on a case-by-case basis to allow for flexibility in scheme design.
		TM4	Walking and Cycling	It is an Objective: • To prioritise walking and cycling in the internal route hierarchy, to create a network of walking and cycling routes within the Plan area and to improve circulation and permeability. • That all proposed access points, routes and streets must connect logically with the existing/proposed street network to aid legibility, permeability and walkability and also must complement local user desire lines. • To ensure that active travel network provides attractive, legible and direct links to the neighbourhood centre, schools, public transport, parks, amenities and services, and the wider area outside the Draft Plan boundary.
		TM5	Pedestrian and Cycle Safety	It is an Objective to enhance pedestrian and cycle safety through the provision of safe road junctions, improved pedestrian crossing facilities and the incorporation of appropriate cycle measures including signalised crossings where necessary.
6.6.2.1	**Active Travel Permeability**	TM6	Filtered Permeability	It is an Objective to progress opportunities for filtered permeability across the Old Connaught area which support improvements in active travel whilst maintaining access for existing vehicular users. Proposals for filtered permeability interventions will be subject to detailed design and development and will incorporate public engagement as part of the process.
		TM7	Active Travel Permeability	It is an Objective that new development or significant redevelopment proposals will be required to maximise permeability and connectivity for pedestrians and cyclists where practicable and appropriate.
6.6.2.2	**Cycle Parking Facilities**	TM8	Cycle Parking	It is an Objective to: • Provide for safe and secure cycle parking at appropriate locations within the Draft Plan area and in particular close to the neighbourhood centre, schools, parks, recreation and community facilities and residential units. • Provide for the integration of cycle parking at public transport stops across the Draft Plan area.
6.6.2.3	**Public Rights-of-Way**	TM9	Public Right of Way	It is an Objective to secure the retention of the established Public Right of Way connecting Crinken Lane and Ferndale Road, in accordance with Policy Objective GIB14 of the dlr County Development Plan 2022-2028.
6.6.3	**Public Transport Network**	TM10	Public Transport Strategy	It is an Objective to support and facilitate the development of an integrated public transport network at Old Connaught, in association with relevant transport providers, agencies and stakeholders.
		TM11	Bus Infrastructure	It is an Objective to engage with the NTA, as the responsible statutory body, to facilitate the extension of the bus network to provide high frequency bus services to support planned population growth in the Old Connaught area.
		TM12	Bus Stop Provision	It is an Objective to work with the NTA to determine the location and siting of bus stops and/or shelters within the Plan area in a manner that: • Minimises walking distances between primary origin and destination land uses and bus stops. • Is fully accessible to all users and is aligned with safe, secure and well-lit routes and crossing points on desire lines. • Incorporates additional place-making opportunities and wayfinding signage where appropriate.
		TM13	Green Line Luas Extension	It is an Objective to seek the extension of the Luas Green Line to serve the Old Connaught area and to actively seek the provision of Luas stops within the Draft Plan area.
		TM14	Transport Orientated Development	It is an Objective to promote the role of Old Connaught as a location suitable for Transport Orientated Development, supported by the planned extension of the Luas Green Line.
		TM15	Light Rail Reservation Corridors	It is an Objective of the Council that proposed light rail reservation corridors identified in Figures 6.13 and 6.18 are reserved for the purpose of public transport infrastructure. Potential interim uses for the

Section	Section Title	Objective No.	Objective Title / header	Objective Text
				reservation corridors, which do not serve as a substitute for necessary permanent infrastructure, will be considered on a case-by-case basis.
		TM16	Public Transport Interchange	It is an Objective to support and facilitate potential opportunities at Old Connaught for public transport interchange between light rail and the bus network.
		TM17	Mobility Hubs	It is an Objective to liaise with relevant stakeholders to establish the feasibility of providing Mobility Hubs at Old Connaught.
6.6.4	**Vehicular Circulation**	TM18	Vehicular Transport Network	It is an Objective to provide a plan-led approach to the delivery of a connected vehicular transport network across the Draft Plan area. Subject to detailed design, the intended routing, function and purpose of the vehicular transport network (as illustrated in Figure 6.14) shall, where practicable, be achieved and shall be subject to compliance with TII Publications where applicable. Further details with regards to the proposed vehicular transport network is set out in Chapter 4 – Spatial Strategy and Site Development Frameworks, and Chapter 11 – Phasing and Implementation.
		TM19	Roads and Streets	It is an Objective, in conjunction and co-operation with other transport bodies and authorities such as the TII and the NTA, to secure improvements to the local road network at Old Connaught whilst ensuring that the priority is still sustainable transport modes, subject to compliance with TII Publications where applicable.
		TM20	Road Schemes	It is an Objective that road schemes will be designed, as appropriate, to provide safe and appropriate arrangements to facilitate walking, cycling and public transport provision, including as applicable, the delivery of walking and cycling facilities off-line where this is considered to be a more attractive solution for these modes.
		TM21	Reallocation of Existing Road Space	It is an Objective to progress opportunities for the re-allocation of existing road space for sustainable transport, active travel and/or public realm improvements.
		TM22	Local Junction Improvements	It is an Objective to upgrade local junctions throughout the Draft Plan area, where required, through the development management process and other appropriate mechanisms, to support integrated transport proposals catering for all road users and to make a positive contribution to the public realm.
		TM23	Traffic Calming	It is an Objective to create multi-functional streets, where appropriate, that balance 'movement' and 'place' and safety for all users within a traffic calmed environment.
6.6.5.1	**Speed Limits**	TM24	Speed Limits	It is an Objective to support a low-speed environment, where appropriate, across the Draft Plan area. The road layout of new residential, commercial, and/or mixed-use developments shall be designed in accordance with DMURS which seeks to create self-enforcing 30km/h zones.
6.6.5.2	**Transition Zones and Gateways**	TM25	Transition Zones and Gateways	It is an Objective to review and assess the need for Transition Zones and Gateways at Old Connaught, subject to compliance with TII Publications.
6.6.5.3	**Low Traffic Neighbourhoods and Home Zones**	TM26	Low Traffic Neighbourhoods	It is an Objective to seek to implement low traffic neighbourhoods in residential areas across the Old Connaught area.
		TM27	Home Zones	It is an Objective to seek to provide homes zones in residential areas across the Old Connaught area.
6.6.5.4	**Safe Routes to School**	TM28	Safe Routes to School	It is an Objective to support the Safe Routes to School initiative and deliver walking and cycling infrastructure on key access routes from residential areas to schools and to provide 'front of school' treatments which will enhance access to school grounds.
6.6.5.5	**Car Parking Management**	TM29	Residential Car Parking	It is an Objective that car parking within the Draft Plan area is controlled so as to determine car use and promote sustainable travel modes. The maximum car parking standards set out in Table 6.1 shall apply across all new residential development within the Draft Plan area, where such provision is justified to the satisfaction of the Planning Authority.
		TM30	Non-Residential Car Parking	It is an Objective that non-residential car parking will be assessed in accordance with Section 12.4.5 Car Parking Standards of the dlr County Development Plan 2022-2028 and will take an area-based parking approach parking that will: • Discourage the use of on-street parking for long-stay purposes such as commuter parking.

Section	Section Title	Objective No.	Objective Title / header	Objective Text
				• Support a hierarchy of car parking need in mixed-use areas, prioritising the needs of people with disabilities, Age Friendly users, parent & child and short-stay shopping. • Ensure that the design and layout of parking facilities does not impede pedestrian and cycle desire lines to entrances to shops and local services. • Reduce the visual impact of surface car parking through the development management process. Require the implementation of Green Infrastructure measures such as landscaping and grasscrete to reduce surface water run-off. • Require minimum levels of visitor cycle parking levels and quality design in accordance with dlr's cycle parking design standards.
		TM31	Disabled and Age Friendly Car Parking	It is an Objective to ensure adequate provision of both disabled and age friendly car parking spaces at appropriate locations across the Draft Plan area.
		TM32	Car Clubs and Car Sharing	It is an Objective to promote car clubs and car sharing schemes to aim to reduce the need for individual car ownership and encourage more sustainable travel.
6.6.5.6	**Remote Parking and Vehicle Restriction Areas**	TM33	Remote Parking and Vehicle Restriction Areas	It is an Objective to consider residential schemes, on a case-by-case basis, which seek to implement the principles of remote parking and vehicular restriction areas in an integrated manner.
6.6.5.7	**Wayfinding and Smart initiatives**	TM34	Wayfinding	It is an Objective that the Council in conjunction with the NTA ensure that a consistent wayfinding system will be introduced and maintained across Old Connaught's transport network and to develop Smart initiatives where applicable.
6.7	**Decarbonising Motor Transport**	TM35	EV Charging Infrastructure	It is an Objective to support the provision of publicly accessible charge points and infrastructure across the Draft Plan area in accordance with the development management standards set out in Section 12.4.11 of the dlr County Development Plan 2022- 2028.
6.8	**Urban Design and Placemaking in Transport Schemes**	TM36	Urban Design in Major Transport Infrastructure Schemes	It is an Objective to require a high standard of urban design and placemaking in the planning and design of all major transport infrastructure schemes.
		TM37	Urban Design in Active Travel Schemes	It is an Objective to require a high standard of urban design and placemaking in the planning and design of all active travel schemes.

Chapter 7: Green Infrastructure and Biodiversity

i. Policies:

Section	Section Title	Policy No.	Policy Title	Policy Text
7.3	**Green Infrastructure**	OCLAP36	Green Infrastructure	It is Policy, where practicable and possible, to protect existing green infrastructure and encourage and facilitate, in consultation with relevant stakeholders, the creation, management, restoration and enhancement of our natural and semi natural areas.
7.4.3	**Views and Prospects**	OCLAP37	Views and Prospects	It is an Objective that development within the Draft Plan area has regard to the Old Connaught Historic Landscape Character Assessment (2007).
7.5.2	**Designated Areas**	OCLAP38	Ballyman Glen SAC / pNHA	It is Policy to protect and preserve the Ballyman Glen site as a designated Special Areas of Conservation and proposed Natural Heritage Areas.
		OCLAP39	Groundwater Dependent Terrestrial Ecosystems	It is Policy that any development proposals with the potential to impact on the Ballyman Glen SAC or any Groundwater Dependent Terrestrial Ecosystems (GWDTE) within the area shall be assessed collaboratively at planning application stage by a hydrogeologist/hydrologist and ecologist and shall take cognisance of the requirement to maintain the rate, quality and general areas where groundwater recharge occurs in order to maintain or enhance the recharge supplying the groundwater dependent habitats of the Ballyman Glen SAC or any other GWDTEs within the area.

				Detailed site-specific assessment shall be required for development proposals situated in the catchment area for GWDTE situated in Ballyman Glen SAC that have the potential to impact groundwater through emissions, abstraction or changes to hydrogeological/hydrological regimes. Appropriate cognizance shall be had to potential connections and interactions between surface water and groundwater.
7.5.5	**Fauna**	OCLAP40	Ecological Assessment	It is Policy to ensure adequate ecological surveys, and, where necessary, ecological impact assessments, are undertaken at project level to inform development decisions, in accordance with the requirements of the dlr County Development Plan 2022- 2028.
7.5.6.2	**Hedgerows**	OCLAP41	dlr Tree Strategy	It is Policy to require that the approach to existing and proposed trees throughout the Draft Plan area is consistent with the dlr Tree Strategy 'A Climate for Trees 2024-2030', to ensure that the tree cover is managed, and developed to optimise the environmental, climatic and educational benefits, which derive from an 'urban forest', and holistic 'urban forestry' approach.
7.5.9	**Nature Based Solutions**	OCLAP42	Nature Based Solutions and Biodiversity	It is Policy to ensure biodiversity is factored into nature-based solutions when developing proposals within the Draft Plan area.
		OCLAP43	SuDS and Biodiversity	It is Policy to ensure that the design of swales and stormwater attenuation areas and SuDS proposals include commitments to addressing a net gain in biodiversity. Where planting is required, native species must be used, including trees where suitable, with advice and input of a wetland ecologist.

ii. Objectives:

Section	Section Title	Objective No.	Objective Title / header	Objective Text
7.4.1	**Landscape Character Assessment**	GIB1	Landscape Character Areas	It is an Objective that development within the Draft Plan Area has regard to, where relevant, the findings of the Landscape Character Assessment for Ballyman (no. 11) and Rathmichael (no. 10), as set out in Appendix 8 of the dlr County Development Plan 2022-2028, and any future County Landscape Character Assessments.
7.4.2	**Historic Landscape Character Assessment**	GIB2	Historic Landscape Character Assessment	It is an Objective that development within the Draft Plan area has regard to the Old Connaught Historic Landscape Character Assessment (2007).
7.4.3	**Views and Prospects**	GIB3	Views and Prospects	It is an Objective that views and prospects within landholdings are further assessed as part of the development management process for planning applications in the Draft Plan area. Where possible, the Planning Authority will seek to integrate the viewing potential of existing views and/or prospects.
7.5.4	**Ecological Network and Wildlife Corridor**	GIB4	Ecological Corridors and Connectivity	It is an Objective to seek to: • Protect, preserve, restore and enhance ecological connectivity within the Draft Plan area and beyond and to restore and mitigate fragmentation of ecological corridors. • Encourage the design and function of green infrastructure to support the movement of species across the area. • Facilitate the creation of new wildlife corridors within new development sites that connect to the wider landscape, as part of the development management process for planning applications in the Draft Plan area
		GIB5	Glendoo Mountain to Shanganagh Wildlife Corridor	It is an Objective to consider the Glendoo Mountain to Shanganagh Wildlife Corridor, identified in the dlr County Biodiversity Action Plan 2021 – 2025, as part of the development management process for planning applications in the Draft Plan area.
7.5.5	**Fauna**	GIB6	Lighting	It is an Objective that the design of lighting within the Draft Plan area should seek to minimise light pollution and adverse effects on bat species, badgers and otters.
7.5.6.2	**Hedgerows**	GIB7	Trees and Hedgerows	It is an Objective to protect and maintain important trees and hedgerows within the Draft Plan area, where practicable, and to promote native tree/hedgerow enhancement and planting. The retention and protection of existing trees / woodlands / hedgerows shall accord with the requirements of the dlr County Development Plan 2022-2028.

Section	Section Title	Objective No.	Objective Title / header	Objective Text
		GIB8	New Development	It is an Objective to promote and encourage planting of native tree and hedgerow species and to provide sufficient buffer to allow for wildlife corridors in new developments across the Draft Plan area.
		GIB9	Boundary Treatments	It is an Objective to: • Require that where the boundaries of sites incorporate or are adjacent to existing trees and hedgerows to be retained, these shall be utilised as part of the boundary. • Encourage the retention of hedgerows and other distinctive boundary treatments to prevent loss and fragmentation, where practically possible.
		GIB10	Sylvan Character	It is an Objective to preserve the sylvan and tree lined character of roads in the Draft Plan area including the Ferndale Road and Allies River Road.
		GIB11	Strategic Infrastructure	It is an Objective to: • Proposals for strategic infrastructure include an appropriate level of tree/hedgerow planting. • The provision of new strategic infrastructure is subject to environmental constraints, including those related to habitats and potential impacts such as disturbance from lighting. Examples of project level mitigation will include minimising river crossings, avoiding sensitive habitats, not increasing barriers to flood waters and sustainable design and construction techniques
		GIB12	Public Realm	It is an Objective to support and promote tree planting and urban greening as part of the public realm at Old Connaught.
7.5.7	**Rivers and Streams**	GIB13	Watercourses and Riparian Corridors	It is an Objective to ensure the protection and where possible the restoration of the biodiversity associated with watercourses and their riparian (bankside) habitats, in line with the overarching objectives set out in the dlr County Development Plan 2022- 2028.
		GIB14	De-Culverting	It is an Objective in accordance with the Green Infrastructure Strategy of the dlr County Development Plan 2022 - 2028 to seek opportunities where appropriate to open up culverted elements of watercourses, to facilitate weir removal where appropriate and reconnect the riverine habitats. Any such proposals shall have regard to SFRA and Appropriate Assessment requirements.
7.5.8	**Biodiversity Led Design and Biodiversity Net Gain (BNG)**	GIB15	Biodiversity Led Design and Biodiversity Net Gain	It is an Objective that proposals for development demonstrate at pre-planning and application stage how biodiversity has informed scheme layout and design. Applicants are encouraged, where appropriate, to pilot the Biodiversity Net Gain Approach (BNG) for development.
		GIB16	Re-wilding and Habitat Restoration/Creation	It is an Objective to support the development and implementation of re-wilding projects using best practice under the supervision of suitably competent professional as deemed appropriate by the Planning Authority, on appropriate sites within the Draft Plan and to promote the use of these sites for the enhancement and preservation of Biodiversity.
7.5.9	**Nature Based Solutions**	GIB17	Attenuation Ponds	It is an Objective to require that attenuations ponds are designed as naturalistic open features (e.g. ponds, wetlands) of value to wildlife and local amenity, with advice and input of a wetland ecologist. Their water quality and storage objectives shall be dealt with in combination with landscape integration, visual amenity and protection/enhancement of biological diversity.

Chapter 8: Open Space, Parks and Recreation

i. Policies:

Section	Section Title	Policy No.	Policy Title	Policy Text
8.4.1.10	**Strategic Parks and Spaces – Policy Provision**	OCLAP44	Network of Strategic Parks and Spaces	It is Policy to implement the network of strategic parks and open spaces set out in Figure 8.2 and detailed in section 8.4.1. Plans, designs, detailed schedules and specifications of work for all strategic parks and spaces are to be agreed with the Local Authority.
8.5	**Public Open Space as part of Residential Schemes**	OCLAP45	Public Open Space for Residential Schemes	It is Policy that a minimum of 10% of total net residential site area shall comprise public open space in new residential developments. Public open space provision for residential schemes will be based on net residential area as defined in Appendix B of the Section Guidelines 'Sustainable and Compact Settlements' (2024).

ii. Objectives:

Section	Section Title	Objective No.	Objective Title / header	Objective Text
8.4.1.10	**Strategic Parks and Spaces – Policy Provision**	OPR1	Allies River Road Active Park	It is an Objective that an overall campus masterplan is progressed to provide a coherent framework to guide the development of Allies River Road Active Park.
8.6	**Connectivity and Permeability**	OPR2	Public Open Space – Accessibility and Permeability	It is an Objective that all proposals for open space promote active travel and demonstrate connectivity and permeability with the wider network of sustainable movement routes across the Draft Plan area.

Chapter 9: Heritage and Conservation

i. Policies:

Section	Section Title	Policy No.	Policy Title	Policy Text
9.4.1.2	**Jubilee Hall**	OCLAP46	Built Heritage	It is Policy to conserve, protect and enhance (as appropriate) the built heritage of Old Connaught including Protected Structures and attendant grounds, in accordance with best conservation practice and policy objectives set out in Chapter 11 and Section 12.11 of the dlr County Development Plan, 2022-2028.
		OCLAP47	Alterations to Protected Structures	It is Policy to support proposals that enhance, extend or change the use of Protected Structures which result in a viable modern use, subject to appropriate design, materials and construction methods. All such proposals shall accord with Policy Objective HER8 and Section 12.11 of the County Development Plan 2022-2028.
		OCLAP48	Re-use of Protected Structures	It is Policy to consider positively the change of use of Protected Structures where it can be shown that the structure, character, appearance and setting will not be adversely affected and where its reuse for an alternative purpose is necessary to ensure a viable future for the building(s).

Section	Section Title	Policy No.	Policy Title	Policy Text
9.4.3	**Areas of Cumulative Heritage Interest - Old Connaught Village Core**	OCLAP49	Old Connaught Village Core	It is Policy that future development at or in proximity to the Historic Old Connaught Village Core (see Figure 9.3) has regard to the distinct character and intrinsic qualities based on the areas historic built form and layout.
9.4.4	**Integration of New Development**	OCLAP50	Historic Character	It is Policy to ensure the protection of the historical character of Old Connaught and ensure that future development / redevelopment is carried out in a manner sympathetic to its special character, thus ensuring that the distinct character and intrinsic heritage qualities of the Old Connaught area are recognised.
		OCLAP51	Character	It is Policy to encourage an interesting and eclectic mix of the old and the new, to strengthen the sense of place, character and identity of the Old Connaught area.
		OCLAP52	High Quality Architecture	It is Policy to support appropriate development of high quality both in terms of design and materials which enhances the visual richness and character of the area.
9.5	**Archaeological Heritage**	OCLAP53	Archaeological Heritage	It is Policy to manage the development of the Plan area in a manner that protects and conserves the archaeological heritage of the area and fully recognises its role in protecting this resource for future generations to enjoy.

ii. Objectives:

Section	Section Title	Objective No.	Objective Title / header	Objective Text
9.4.1.2	**Jubilee Hall**	HC1	Victorian Walled Gardens	It is an Objective to: • Support the continued use and/or potential adaptive re-use of the Victorian Walled Gardens in line with its underlying Objective 'F' zoning status. • Enhance and extend the public realm setting of the Walled Gardens through the integration of strategic public open space immediately to the north (see section 8.4.1.3 – Walled Gardens Park). • Ensure that any development in proximity of the Walled Gardens, including improvements to the public realm, protects, conserves and enhances its setting.
		HC2	Jubilee Hall	It is an Objective to: • Seek the regeneration of Jubilee Hall as part of the wider re-development of the Western Character Area and consider positively proposals that improve, extend or change the use of Jubilee Hall that results in a viable modern use, subject to appropriate design, materials and construction methods. • To ensure a holistic approach to the regeneration of Jubilee Hall, proposals for the protected structure must form part of an application for the wider re-development of the area. • Enhance and extend the public realm setting of Jubilee Hall through the integration of the Protected Structure with strategic public open space surrounding the structure (see section 8.4.1.6 – Jubilee Hall Park). • Integrate the former walled gardens of Jubilee Hall as a heritage feature as part of Jubilee Hall Park.
9.4.3	**Areas of Cumulative Heritage Interest - Old Connaught Village Core**	HC3	Cumulative Heritage Interest	It is an Objective to protect, enhance and promote Old Connaught's built heritage through the possible designation of the village core as a candidate / Architectural Conservation Area as part of the forthcoming review of the dlr County Development Plan. An indicative boundary is shown in Figure 9.3
9.5	**Archaeological Heritage**	HC4	Old Connaught Church and Graveyard	It is an Objective to:

Section	Section Title	Objective No.	Objective Title / header	Objective Text
				• Explore the potential of facilitating, in a sustainable manner, increased public access to the medieval church and graveyard, to provide on-site interpretation and improve the management of the grounds consistent with its conservation as a national monument. • Ensure that any development in proximity to the medieval church and graveyard, including improvements to the public realm, protects and enhances the setting.
9.7	**Communicating Heritage**	HC5	Communicating Heritage through the Public Realm	It is an Objective to: • Communicate the heritage of Old Connaught through its sensitive integration with the public realm including the area-wide open space and active travel networks. • Facilitate, provide and/or retain where appropriate, plaques, signage and maps communicating an interpretation of the historical and natural heritage of Old Connaught.
		HC6	Historic Paths	It is an Objective to seek to preserve mass paths throughout Old Connaught, where possible.

Chapter 10: Infrastructure, Utilities and Flood Risk

i. Policies:

Section	Section Title	Policy No.	Policy Title	Policy Text
10.1	**Introduction**	OCLAP54	Co-ordination with Infrastructure Stakeholders	It is Policy to promote an active land management approach through on-going co-ordination with relevant stakeholders and infrastructure providers in the delivery of enabling infrastructure at Old Connaught to support the sustainable development of the Draft Plan area.
10.3.1	**Water Infrastructure**	OCLAP55	Water Framework Directive	It is Policy to facilitate compliance with the requirements of the EU Water Framework Directive and any relevant legislation. In this regard, the Council will facilitate compliance with the relevant objectives and measures set out in the ongoing 'River Basin Management Plan' (2022- 2028) and associated Programme of Measures, where relevant. Applications for development under this LAP must demonstrate that the proposal for development would not adversely affect a water body's ability to meet its objectives under the Water Framework Directive, individually as a result of the proposed development or cumulatively, in combination with other developments.
10.3.2	**Wastewater Infrastructure**	OCLAP56	Wastewater Treatment	It is Policy to facilitate Uisce Éireann in ensuring that all wastewater generated is collected, treated and discharged after treatment in a safe and sustainable manner, having regard to the standards and requirements set out in EU and national legislation and guidance.
10.4	**Drainage Infrastructure**	OCLAP57	Sustainable Urban Drainage Systems	It is Policy to: • To promote the use and appropriate maintenance of Sustainable Urban Drainage Systems (SuDS) to manage surface and groundwater regimes sustainably. These should be applied to all developments, including new road and public spaces, in line with Appendix 7 (7.1 and 7.2) of the dlr County Development Plan 2022-2028, to suit individual site layouts and local ground conditions. • Design and maintenance of SuDS Systems should be in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) and the CIRIA SUDS Manual. The proposed networks should be designed in accordance with Appendix 7 (7.1 and 7.2) of the dlr County Development Plan 2022- 2028, CIRIA C753 'The SuDS Manual' and the Greater Dublin Strategic Drainage Systems (GDSDS). • The primary regional pond to serve the Old Connaught area shall be provided at lands identified in Figure 10.4. An additional, secondary and smaller attenuation pond should be provided at

Section	Section Title	Policy No.	Policy Title	Policy Text
				lands also identified in Figure 10.4. These ponds will provide storage to meet attenuation requirements for the 1% AED and provide the final stage of treatment for water runoff prior to discharge to the public network/stream outside of the Old Connaught LAP area. The ponds may provide amenity and biodiversity benefits in accordance with best design practice. • To pilot and test new green infrastructure installations in the public realm to boost biodiversity and improve surface water management, including the use of permeable materials for surfaces, green roofs and the provision of storm water tree trenches / pit. • To support the development of soft landscaping in public open spaces and parks, where feasible in accordance with the principles of Sustainable Drainage Systems (SuDS).
		OCLAP58	Groundwater	It is Policy to: • Ensure the protection of groundwater resources and associated habitats and species in accordance with the EU Groundwater Directive. All new planning applications within the LAP area shall have regard to the likely impacts the proposed development may have on groundwater resources. • Ensure that planning applications take into account any existing groundwater protection schemes and groundwater source protection zones and/or the likely impacts that the development may have on groundwater.
		OCLAP59	Surface Water Regulations	It is Policy to ensure the implementation of the surface water legislation 'Environmental Objectives (Surface Waters) Regulations 2009' to ensure that development permitted will not have an unacceptable impact on water quality including surface waters, ground water, river corridors, estuarine waters, bathing waters, coastal and transitional waters. Development within the Draft Plan area shall comply with the Policies and Objectives of the dlr County Development Plan relating to protection of existing water and drainage infrastructure.
10.5.2.1	**Flood Risk Assessment of the Old Connaught Tributary**	OCLAP60	Flood Risk Assessment	It is Policy to manage flood risk in the Old Connaught LAP area in accordance with the requirements of The Planning System and Flood Risk Management Guidelines for Planning Authorities, DECLG and OPW (2009) and Circular PL02/2014 (August 2014) and to require all proposed developments to carry out a Site-Specific Flood Risk Assessment that shall demonstrate compliance with: • The Planning System and Flood Risk Management, Guidelines for Planning Authorities (DEHLG/OPW, 2009), as may be revised and/or updated. • The prevailing Dún Laoghaire-Rathdown County Development Plan. • Any SSFRA shall not be required to carry out a Plan-Making Justification Test, given that this exercise was already carried out at County Development Plan-level. • The SSFRA shall pay particular emphasis to site specific mitigation measures and any necessary management measures, as per Appendix B4 of the above 2009 National Guidelines.
		OCLAP61	Flood Risk Considerations	It is Policy that proposed development in and adjacent to Flood Zone A and B will include for the management of flooding on site, and within the scope of the SSFRA. Use of the sequential approach should be presented in a Masterplan which should demonstrate that there is no highly vulnerable development within Flood Zones A or B. There should be no loss of floodplain storage for the 1% AEP event and the impact of any changes to ground levels and storage areas as part of flood management proposals should be assessed for the 0.1% AEP flood. As overland flow is the primary source of flood risk, it is important that conveyance routes through the site are maintained. The SSFRA will also need to demonstrate there is no impact in flood risk to third party lands.
10.6.1	**Electricity**	OCLAP62	ESB	It is Policy to safeguard the reservation of lands, as indicated on Figure 10.8, for the provision of a 38Kv ESB station.

Section	Section Title	Policy No.	Policy Title	Policy Text
10.6.3	**Renewable Energy**	OCLAP63	Renewable Energy Use	It is Policy to: • Encourage and support the development of solar energy infrastructure, including photo voltaic (PV) in appropriate locations. where it is demonstrated that such development will not introduce significant adverse environmental effects. • Support the development of district heat networks and the utilisation of waste heat recovery having due regard to potential environmental impacts typically associated with district heating development.
10.7	**ICT/Communications**	OCLAP64	Telecommunications Infrastructure	It is Policy to promote and facilitate the provision of an appropriate telecommunications infrastructure at Old Connaught, including broadband, fibre optic connectivity and other technologies.
10.8	**Waste Management**	OCLAP65	Waste Management	It is Policy to develop a network of bring centres at Old Connaught to support waste management at the local level. In order to maximise access to the public, it is a requirement to provide bring centres at the neighbourhood centre and lands identified as an active park.

Chapter 11: Phasing and Implementation

i. Policies:

Section	Section Title	Policy No.	Policy Title	Policy Text
11.3	**Old Connaught LAP Phasing Strategy**	OCLAP66	Phasing Strategy	It is Policy that: • Future development, as appropriate, shall accord with the Phasing Strategy for the Draft Plan. Planning applications shall include a 'Consistency Statement' setting out how the objectives of the Phasing Strategy, as relevant and applicable to the proposal for development, will be achieved. • Deviations from the phasing strategy may be considered on a case-by-case basis, and agreed to the satisfaction of the Planning Authority, to allow for unforeseen circumstances beyond the reasonable control of an individual developer or the Local Authority. Deviations may comprise viable alternatives or interim measures that accord with the overall objectives of the Draft Plan. Any interim proposals must ensure and maintain consistency with the build-out or 'longterm' infrastructure objectives of the Draft Plan.

ii. Objectives:

Section	Section Title	Objective No.	Objective Title / header	Objective Text
11.3.4	**Phasing of Education**	PI1	Phasing of Education	It is an Objective to engage with the Department of Education to co-ordinate the timely delivery of new schools to support the sustainable development of the Draft Plan area.
11.3.7	**Medium/Long Term Infrastructure Upgrades**	PI2	Medium/Long Term Infrastructure Upgrades	It is an Objective to progress medium/long term infrastructure projects in conjunction with other statutory agencies and stakeholders.
11.4.1	**Infrastructure Funding**	PI3	Statutory Development Contribution Scheme	It is an Objective to progress a statutory development contribution scheme to fund public infrastructure and facilities benefitting development in the Draft Plan area.
		PI4	Infrastructure Funding and Delivery	It is an Objective to engage with inter alia the Department of Housing, Local Government and Heritage, the Department of Transport, the National Transport Authority, Transport Infrastructure Ireland, Uisce

Section	Section Title	Objective No.	Objective Title / header	Objective Text
				Éireann, ESB, other relevant statutory agencies, and landowners, where appropriate, to bring forward key projects and funding streams in order to facilitate the timely and successful implementation of development in the LAP areas.
		PI5	Funding Mechanisms	It is an Objective to consider all potential public and private funding streams for the delivery of enabling infrastructure and facilities to support the implementation of the Draft Plan.
11.4.2	**Active Land Management**	PI6	Active Land Management	It is an Objective to utilise active land management mechanisms to ensure lands are brought forward in a timely manner when services are in place to facilitate development.

Chapter 12: Phasing and Implementation

i. Policies:

Section	Section Title	Policy No.	Policy Title	Policy Text
12.4	**Monitoring Framework**	OCLAP67	Monitoring and Evaluation	It is Policy to establish a plan monitoring framework to strategically evaluate the progress of the Draft Plan.

Appendix 4: Acronyms and Glossary

4.1 Acronyms

Acronym	Meaning
AA	Appropriate Assessment
ABP	An Bord Pleanála
ABTA	Area Based Transport Assessment
ACA	Architectural Conservation Area
AEP	Annual Exceedance Probability
BHS	Building Height Strategy
BNG	Biodiversity net Gain
BPIS	Bus Priority Interim Scheme
CBC	Core Bus Corridor
CCAP	Climate Change Action Plan
CDM	Cycle Design Manual
CDP	County Development Plan
CFRAM	Catchment Flood Risk Assessment and Management
CSO	Central Statistics Office
DART	Dublin Area Rapid Transit
DLR	Dún Laoghaire-Rathdown
DLRCC	Dún Laoghaire-Rathdown County Council
DMURS	Design Manual for Urban Roads and Streets
DoE	Department of Education
ECFRAM	Eastern Catchment Flood Risk Assessment and Management Plan
EMRA	Eastern and Midlands Regional Assembly
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
EU	European Union
EV	Electric Vehicle
FRA	Flood Risk Assessment
FRMP	Flood Risk Management Plan
FRS	Flood Relief Scheme
GAA	Gaelic Athletic Association
GDA	Greater Dublin Area
GDSDS	Greater Dublin Strategic Drainage Study

Acronym	Meaning
GHG	Greenhouse Gas
GI	Green Infrastructure
GSI	Geological Survey of Ireland
GWDTE	Groundwater Dependent Terrestrial Ecosystems
HIQA	Health Information and Quality Authority
HLCA	Historic Landscape Character Assessment
HNDA	Housing Needs Demand Assessment
HSE	Health Service Executive
LAP	Local Area Plan
ICAS	Infrastructure Capacity Assessment Study
ICT	Information and communication technology
MA	Material Amendment
MASP	Metropolitan Area Strategic Plan
MCA	Multi-Criteria Analysis
NC	Neighbourhood Centre
NDP	National Development Plan
NIFM	National Indicative Fluvial Mapping
NPAP	National Physical Activity Plan
NPF	National Planning Framework
NPO	National Policy Objective
NPWS	National Parks and Wildlife Service
NBS	Nature Based Solutions
NSO	National Strategic Outcome
NTA	National Transport Authority
OCLAP	Old Connaught Local Area Plan
OPR	Office of the Planning Regulator
OPW	Office of Public Works
PDA	Planning and Development Act
PFRA	Preliminary Flood Risk Assessment
PTAL	Public Transport Accessibility Level
PV	Photo Voltaic
RMP	Record of Monuments and Places

Acronym	Meaning
RPO	Regional Policy Objective
RSES	Regional Spatial and Economic Strategy
RSO	Regional Strategic Outcome
RPS	Record of Protected Structures
SAC	Special Area of Conservation
SDF	Site Development Frameworks
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SI	Statutory Instrument
SLO	Specific Local Objective
SLR	Strategic Land Reserve
SNI	Sustainable Neighbourhood Infrastructure
SPA	Special Protection Area
SPPR	Specific Planning Policy Requirement
SSFRA	Site Specific Flood Risk Assessment
SuDS	Sustainable Drainage Systems
SWOC	Strengths, Weaknesses, Opportunities and Constraints
TE	Tailte Éireann
TII	Transport Infrastructure Ireland
TIA	Transport Impact Assessment
TOD	Transport Orientated Development
UE	Úisce Eireann
UK	United Kingdom
UN	United Nations
UNSDG	United Nations Sustainable Development Goals
WFD	Water Framework Directive

4.2 Glossary

A

Active Travel:
Active Travel is travelling with a purpose using your own energy. Generally, this means walking (including all users of footpaths) or cycling as part of a purposeful journey. Increasingly, non-motorised scooters are also being used for urban transport, especially by school children, and this would also be considered as active travel. Walking as part of a commute to work, cycling to the shop or scooting to school are all considered active travel, whereas walking or cycling for purely leisure purposes is not.

Adaptable Housing:
The potential to modify the spaces of a home by altering the fabric of the building to cater for the different needs of an individual's or family's life cycle (e.g. a study space becomes a bedroom; a living room area enlarges by merging with an adjacent room etc).

Appropriate Assessment:
An appropriate assessment (AA) is an assessment of the potential adverse effects of a plan or project (in combination with other plans or projects) on Special Areas of Conservation and Special Protection Areas. These sites are protected by National and European Law.

Architectural Conservation Area (ACA):
A place, area, group of structures or townscape, taking account of building lines and heights, that is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or that contributes to the appreciation of protected structures.

Assisted living:
A development for those that require assisted living in specifically designed units in which dining, recreation, hygiene and health care facilities can be shared on a communal basis.

Attendant Grounds:
The attendant grounds of a structure or lands outside the curtilage of the structure but which are associated with the structure and are intrinsic to its function, setting and/or appreciation.

Avoid-Shift- Improve:
Avoid-Shift-Improve of A-S-I approach is an approach to Transport Planning and Management. This approach changes the emphasis from moving cars to moving people with a focus on demand management. This approach is based on avoiding or reducing the need to travel, shifting to more environmentally friendly modes and improving the energy efficiency of motorised transport modes. The aim is to reduce congestion, create more liveable cities and reduce greenhouse gas (GHG) emissions.

B

Biodiversity:
Describes the variability among living organisms on the earth, including the variability within and between species and also within and between ecosystems.

Biodiversity Net Gain:
Biodiversity Net Gain (BNG) is an approach to development, land and marine management that leaves biodiversity in a measurably better state than before the development took place.

Bus gate:
A short section of road that only buses and authorised vehicles can go through.

C

Climate change:
Climate change includes both the global warming driven by human emissions of greenhouse gases, and the resulting large-scale shifts in weather patterns.

Climate resilience:
The capacity of social, economic and ecosystems to cope with a climate related hazardous event or trend or disturbance (e.g. flooding) through responding or reorganising the ways that maintain their essential function, identity and structure as well as biodiversity in case of ecosystems while also maintaining the capacity for adaptation, learning and transformation.

Convenience retail:
Convenience Retail means the retail sale of those goods often acquired on a day-to-day basis and includes food; - alcoholic and non-alcoholic beverages and non-durable household goods.

Compact Growth:
The delivery of a greater proportion of residential development within existing built-up areas of our cities, towns and villages with a focus on infill development, integrated transport and promotion of regeneration and revitalisation of urban areas.

Curtilage:
Curtilage is an area of land attached to a house and forming one enclosure with it, "the roads within the curtilage of the development site".

D

Development Management:
This is a term to describe the process where the local authority assesses the merits of a proposed development through the planning process (where planning applications are lodged) including the processing, evaluation, decision making and notification components of that process.

District Heating:
A district heating scheme consists of an insulated pipe network, which allows heat generated from a single or several larger centralised source(s) (energy centres) to be delivered to multiple buildings to provide space heating and hot water.

E

Ecosystem:
An ecosystem is that it is a community or group of living organisms that live in and interact with each other in a specific environment.

Ecosystem Services Approach:
Ecosystem services approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.

Electric vehicles:
A battery-only electric vehicle or all-electric vehicle derives all its power from its battery packs and thus has no internal combustion engine, fuel cell, or fuel tank. A plug-in hybrid vehicle (PHV) is a hybrid electric vehicle which utilizes rechargeable batteries, or another energy storage device, that can be restored to full charge by connecting a plug to an external electric power source. A PHEV shares the characteristics of both a conventional hybrid electric vehicle, having an electric motor and an internal combustion engine (ICE), and of an all-electric vehicle, having a plug to connect to the electrical grid. E-bikes are electrically powered bicycles and E-cargo bikes are electrically powered cargo bicycles.

F

Filtered permeability:
Filtered permeability is a concept that "filters out" through car traffic on selected streets by measures such as bollards, planters, trees, or even just camera enforcement, to create a more attractive environment for walking and cycling, while maintaining accessibility for local inhabitants, deliveries or emergencies.

Flood Risk Management:
Flood risk management aims to reduce the human and socio-economic losses caused by flooding while taking into account benefits from floods. Therefore, one important part of Flood Risk Management is to analyse the relationships between physical system, the institutional framework and socio-economic environment. The most effective approach is through the development of flood risk management programmes incorporating prevention, protection, preparedness, emergency response and recovery and lessons learned.

G

Green Infrastructure:
Green Infrastructure is defined as a strategically planned network of high quality natural and semi- natural areas with other environmental features, which is designed and managed to deliver a wide range of ecosystem services and protect biodiversity in both rural and urban settings.

H-I

Invasive Species:
Invasive species are non-native species that have been introduced by human intervention, outside their natural range and that has the ability to threaten our native wildlife, cause damage to our environment, economy or human health.

J-K-L

Landscape:
An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.

M

Mitigation:
An action that helps to lessen the impacts of a process or development on the receiving environment. It is used most often in association with measures that would seek to reduce negative impacts of a process or development.

Mobility Hub:
These are hubs where a range of shared travel options – including, for example, shared bikes, electric bikes or e-cars – come together and can be accessed in one place by people who need them. They are often located close to other public travel nodes.

Modal shift:
The process where people change their travel behaviour (usually between home and work) from a particular type of transport (private car for example) to another more sustainable form of travel (public transport for example).

N

Nature-based solutions:
The International Union for the Conservation of Nature (IUCN) defines NBS as "actions to protect, sustainably manage and restore natural or modified ecosystems, which address societal challenges [such as food security, climate change, water security, human health, disaster risk, social and economic development] effectively and adaptively, while simultaneously providing human well-being and biodiversity benefits.

Net Density Calculations:
Defining Net Density for the purpose of Local Area Plan making is outlined the Sustainable and Compact Settlement Guidelines (2024) with the calculation methodology of same further explained in Appendix B.

O-P

Protected Structure:
A structure, or a specified part of a structure, which is included in the record of protected structures (see Appendix 4 of the County Development Plan 2022-2028), which forms part of the architectural heritage of an area, and which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. A protected structure may include any specified feature which is within the attendant grounds of the structure.

Public Realm:
The public realm embraces the external places in our towns and cities that are accessible to all. These are the everyday spaces that we move through and linger within, the places where we live, work and play.

Q - R

Retail hierarchy:
The different levels or rank of importance of retail locations in either national, regional or city terms. Higher ranking centres have a far greater role in providing services for a very wide or specialist catchment (e.g. high street fashion stores in the Major Town Centres attract people across the city) and lower ranking centres have a more localised and neighbourhood role (corner shops for the convenience of local residents).

S

Sustainable development:
The definition of sustainable development comes from the Brundtland Commission (1983) which states it as development 'that meets the needs of the present without compromising the ability of future generations to meet their own needs'. The Brundtland Commission was convened as a world commission on the environment amid growing concern for the deterioration of the natural environment, the depletion of natural resources and consequences for social and economic development.

Sustainable urban Drainage Systems (SuDs):
Sustainable urban drainage systems aim towards maintaining or restoring a more natural hydrological regime, such that the impact of urbanisation on downstream flooding and water quality is minimised. SuDS involve a change in our way of managing urban run-off from solely looking at volume control to an integrated multi-disciplinary approach which addresses water quality, water quantity, amenity and habitat. SuDS minimise the impacts of urban runoff by capturing runoff as close to source as possible and then releasing it slowly.

Sustainable Neighbourhood Infrastructure:
Sustainable neighbourhood infrastructure includes land or buildings that serve the needs of the local and wider community for social, educational, health, religious, recreational and leisure, community, cultural, and civic needs. These facilities and uses may be provided by public sector bodies, the community themselves or by the private sector. Facilities and services include, but are not limited to – schools, third level education, places of worship, hospitals, health centres/GPs, community centres, youth centres, leisure centres, family resource centres, libraries, church/parish halls, meeting rooms, scout dens, men's sheds, theatres and civic offices.

T

Taking in Charge:
The term "Taking in Charge" means that the Local Authority assumes responsibility for certain services located within the common areas and public areas associated with a particular estate.

10-Minute Settlement / Neighbourhood Concept:
The 10-minute settlement / neighbourhood concept is where homes have access to a range of facilities and services, such as sustainable neighbourhood infrastructure or local shops, are accessible from homes within a short 10-minute walk or cycle or there is access to high quality public transport within a 10-munite walk from homes that provide access to a range of facilities or services.

Transport Orientated Development:
Transport Orientated Development is a form of urban development that seeks to maximise the provision of housing, employment, public services and leisure space in close proximity to frequent, high-quality transport services. It is a form of development that is friendlier to public transport users, cyclists and pedestrians, and seeks to convert car trips to public and active transport trips. This in turn improves mobility and

environmental conditions and delivers more efficient and sustainable urban development.

U

Universal design:
The design and composition of indoor and outdoor physical environments so that they can be accessed and used to the greatest extent possible by all people regardless of their age, size or disability.

Urban fabric:
The physical characteristics of urban areas that includes the streetscapes, buildings, soft and hard landscaping, signage, lighting, roads and other infrastructure.

Urban realm:
The physical and social spaces found in urban areas, including the buildings, roads, footpaths, amenity spaces etc. as well as the people and activities that occur within it (see also Public Realm).

Urban grain:
A measure of the pattern of building plots, building widths and streets in urban areas and when this pattern is dominated by small plots it is described as fine urban grain. Older parts of the city tend to have a fine grain with many streets/ lanes and smaller plots.

Urban greening:
Urban greening is the provision of all forms of planting/soft landscaping, including trees, shrubs, lawn, pervious soil etc in urban areas and can include features on buildings such as green or living roofs on larger or small buildings, green or living walls etc.

V-W-X-Y-Z

Wayfinding:
The way in which people orient themselves in physical space and navigate from place to place. It can include the use of signage, colour, and other design elements to help navigate a space or area.

Wildlife Corridor:
A wildlife corridor, also known as a habitat corridor, or green corridor, is a designated area that connects wildlife populations that have been separated by human activities or structures, such as development, roads, or land clearings.

Appendix 5: Built Heritage

1. Introduction

This Appendix identifies structures within Old Connaught that are listed on the Record of Protected Structures (RPS), as set out in Appendix 4 of the dlr County Development Plan 2022-2028. Each Protected Structure has an ID number and is identified on the Built Heritage map below. These ID numbers can be cross referenced with Table 5.1 which sets out details for each structure including:

- The RPS number from Appendix 4 in the County Development Plan.
- The structure name, location, building type and use (original and current).
- Where the structure has been surveyed by the National Built Heritage Service (NBHS), their rating, description, Reg. number and category of special interest is set out together with a link to the survey entry for the structure.

The Built Heritage Map also identifies:

- Monuments listed on the Record of Monuments and Places (RMP)
- Industrial Heritage sites.

Full details of these can be found in Appendix 4 of the dlr County Development Plan 2022-2028 which is available to view at: https://www.dlrcoco.ie/index.php/CDP2022-2028

Note 1: Not all structures that are on the RPS have been surveyed by the NBHS, in this instance, only details from the RPS within the County Development Plan is contained in the table.

Note 2: A number of Structures are grouped under one RPS number in Appendix 4 below but may have separate NBHS Reg. numbers.

Note 3: The National Built Heritage Service surveys can be viewed by map, or by entering the NBHS Reg. No listed in Table 5.1 at: https://www.buildingsofireland.ie/buildings-search/

Table 5.1: Protected Structures located within the Draft Old Connaught LAP area.

RPS No.	Structure Name	Location	Building Type	NBHS Reg. No.	Original Use	Current Use	NBHS Categories of Special Interest	NBHS Rating	NBHS Description (where applicable)
1868	Cuilin	Allies River Road, Bray, Co. Dublin.	House	60260083	House	House	Architectural, Artistic, Historical, Social	Regional	Detached three-bay (two-bay deep) two-storey house, extant 1837, on a square plan; three-bay two-storey rear (west) elevation. "Improved", 1848, producing present composition. Leased, 1855. For sale, 1871. Occupied, 1901; 1911. Sold, 1998. For sale, 2011. Hipped slate roof on an E-shaped plan centred on hipped slate roof (west), clay ridge tiles, rendered chimney stacks on axis with ridge having stringcourses below capping supporting yellow terracotta octagonal pots, and cast-iron rainwater goods on timber eaves boards on slightly overhanging eaves retaining cast-iron octagonal or ogee hoppers and downpipes. Part creeper- or ivy-covered roughcast walls bellcast over rendered plinth with rendered panelled pilasters to corners. Square-headed central door opening into house with concealed dressings framing glazed timber panelled double doors. Square-headed central window opening in tripartite arrangement (first floor) with cut-granite sill, timber mullions, and concealed dressings framing four-over-four timber sash windows. Square-headed window openings in bipartite arrangement (ground floor) with cut-granite sills, timber mullions and concealed dressings framing two-over-two timber sash windows having margins. Square-headed window openings in bipartite arrangement (first floor) with cut-granite sills, timber mullions, and concealed dressings framing four-over-four timber sash windows. Square-headed window openings to rear (west) elevation centred on round- or segmental-headed window opening (half-landing), cut-granite sills, and concealed dressings framing six-over-six timber sash windows centred on six-over-six timber sash window having fanlight. Interior including (ground floor): central hall retaining carved timber surrounds to door openings framing timber panelled doors, and egg-and-dart-detailed decorative plasterwork cornice to ceiling centred on "Acanthus"-detailed ceiling rose; square-headed door opening into staircase hall with carved timber surround; staircase hall (west) retaining carved timber surrounds to door openings framing timber panelled doors, staircase on a dog leg plan with turned timber "spindle" balusters supporting carved timber banister terminating in volute, carved timber surrounds to door openings to half-landing framing timber panelled doors centred on carved timber surround to

RPS No.	Structure Name	Location	Building Type	NBHS Reg. No.	Original Use	Current Use	NBHS Categories of Special Interest	NBHS Rating	NBHS Description (where applicable)
									window opening framing timber panelled shutters, carved timber surrounds to door openings to bow-ended landing framing timber panelled doors, and decorative plasterwork cornice to coved ceiling centred on "Acanthus"-detailed ceiling roses in moulded plasterwork frame; drawing room (south-east) retaining carved timber surround to door opening framing timber panelled door with carved timber surrounds to window openings framing timber panelled shutters, inlaid cut-white marble Classical-style chimneypiece, and egg-and-dart-detailed decorative plasterwork cornice to ceiling centred on decorative plasterwork ceiling rose; dining room (north-east) retaining carved timber surround to door opening framing timber panelled door with carved timber surrounds to window openings framing timber panelled shutters, chimneypiece, and decorative plasterwork cornice to ceiling centred on decorative plasterwork ceiling rose; and carved timber surrounds to door openings to remainder framing timber panelled doors with carved timber surrounds to window openings framing timber panelled shutters. Set in landscaped grounds.
1875	Old Connaught House	Old Connaught Avenue, Bray, Co. Dublin.	Country house	60260073	Country house	Apartments (converted)	Architectural, Artistic, Historical, Social	Regional	Detached eleven-bay two-storey over basement country house, built 1783-4, on a rectangular plan originally nine-bay two-storey on a symmetrical plan centred on three-bay two-storey pedimented breakfront with (single-storey) prostyle tetrastyle Ionic portico to ground floor; single-bay (three-bay deep) two-storey "bas-relief" recessed end bays; eleven-bay full-height rear (east) elevation. Occupied, 1911. Sold, 1946. In alternative use, 1946-72. Sold, 1972. Renovated and extended, 2000-2, to accommodate alternative use. Hipped slate roof on an elongated quadrangular plan behind parapet with clay ridge tiles, rendered chimney stacks including rendered chimney stacks on axis with ridge having cut-granite cornices below capping supporting terracotta or yellow terracotta octagonal pots, and concealed rainwater goods retaining cast-iron hoppers and downpipes. Rendered channelled walls (ground floor) on cut-granite chamfered cushion course on rendered, ruled and lined base with rendered corbelled stepped stringcourse; rendered, ruled and lined surface finish (first floor) with rusticated rendered piers to corners including rusticated rendered piers to corners (breakfront) supporting cut-granite "Cyma Recta"- or "Cyma Reversa"-detailed cornice on blind frieze below parapet centred on cut-granite "Cyma Recta"- or "Cyma Reversa"-detailed pediment. Series of three square-headed central door openings behind (single-storey) prostyle tetrastyle Ionic portico on cut-granite platform with paired cut-granite columns supporting "Cyma Recta"- or "Cyma Reversa"-detailed cornice on blind frieze on entablature below iron-covered parapet, and rosette-detailed moulded surrounds framing glazed timber panelled double doors having overlights. Square-headed window openings (basement) with cut-granite sills, and concealed dressings framing replacement three-over-three timber sash windows. Square-headed window openings (ground floor) with cut-granite sills, and concealed dressings having bull nose-detailed reveals with "Cyma Recta"- or "Cyma Reversa"-detailed hood mouldings on fluted consoles framing replacement six-over-six timber sash windows. Square-headed window openings (first floor) with cut-granite sills, and concealed dressings framing replacement three-over-six timber sash windows. Interior including (ground floor): central hall retaining carved timber surrounds to door openings framing timber panelled doors. Set in landscaped grounds.

RPS No.	Structure Name	Location	Building Type	NBHS Reg. No.	Original Use	Current Use	NBHS Categories of Special Interest	NBHS Rating	NBHS Description (where applicable)
1876	Palermo	Old Connaught Avenue, Bray, Co. Dublin.	Walled Garden	60260075	Walled Garden	Walled Garden	Architectural	N/A	Walled garden, extant 1837, on a rectangular plan with coursed rubble stone boundary wall to perimeter having rendered red brick header bond coping; red brick Flemish bond surface finish to courtyard elevations. Extended, 1874, producing present composition. Disused, 1972-92. Leased, 1996. Restored, 2001-4. Set in grounds shared with Old Connaught House.
1879	Jubilee Hall (Spanish School)	Ballyman Road, Bray, Co. Dublin.	Country house	60260090	Country house	N/A	Architectural, Artistic, Historical, Social	Regional	Detached six-bay two-storey country house, extant 1814, on an asymmetrical T-shaped plan with single-bay full-height turret on a square plan abutting single-bay two-storey bow on a semi-circular plan. Leased, 1867-93. Occupied, 1911. Sold, 1985. Vacated, 2008. Now disused. Interior including (ground floor): double-height hall retaining tessellated terracotta tiled floor, Tudor-style surrounds to door openings framing timber panelled doors having overpanels centred on cut-granite Tudor-style chimneypiece, quatrefoil-detailed cantilevered staircase on a dog leg plan with oak leaf-detailed woodgrained cast-iron balusters supporting carved timber banister terminating in quatrefoil-detailed timber newels, Tudor-style surrounds to door openings to half-landing framing timber panelled doors having overpanels with crocketed moulded surround to window opening, and quatrefoil-detailed "faux" groin vaulted plasterwork ceiling on panelled half-octagonal corbels with decorative plasterwork pendent. Set in landscaped grounds with roughcast cylindrical piers to perimeter having stringcourses below rendered battlemented capping supporting "Fleur-de-Lys"-detailed wrought iron double gates.
1880	Graveyard	Old Connaught Avenue, Bray, Co. Dublin.	Graveyard	DU026-066002	Graveyard	Graveyard			The medieval parish church of Old Connaught (DU026-066001-) stands in a burial ground outside the village of Old Connaught. This is a low lying area close to the estate landscape surrounding Old Connaught House. There are 19th-20th century memorials within the cemetery (Anon 1900, 187; Ball 1902, 120: Turner 1983, 47).
1881	Old Bawn	Old Connaught Avenue, Bray, Co. Dublin.	House	60260078	House	House	Architectural, Artistic, Historical, Social	Regional	Detached five-bay two-storey house, built 1790, on a T-shaped plan with single-bay (single-bay deep) full-height off-central return (south). Occupied, 1911. Sold, 1928. Resold, 1988. Pitched slate roof on a T-shaped plan off-centred on hipped slate roof (south), clay ridge tiles, concrete or rendered coping to gables with rendered, ruled and lined chimney stacks to apexes having stepped capping supporting yellow terracotta tapered pots, rooflights to rear (south) pitch, and cast-iron rainwater goods on wrought iron brackets on rendered eaves retaining cast-iron hoppers and downpipes. Part creeper- or ivy-covered Portland Cement rendered, ruled and lined wall to front (north) elevation; roughcast surface finish (remainder). Elliptical-headed central door opening with cut-granite step threshold, and rendered doorcase with tied reeded pilasters supporting tied reeded archivolt framing timber panelled door having sidelights below fanlight. Square-headed flanking window openings with cut-granite sills, and concealed dressings framing rendered, ruled and lined infill (east) or six-over-six timber sash windows without horns (west). Square-headed window openings (first floor) with cut-granite sills, and concealed dressings framing three-over-three timber sash windows without horns. Interior including (ground floor): central entrance hall retaining carved timber surrounds to door openings framing timber panelled doors, and plasterwork cornice to ceiling; and carved timber surrounds to door openings to remainder framing timber panelled doors with timber panelled shutters to window openings. Set in

RPS No.	Structure Name	Location	Building Type	NBHS Reg. No.	Original Use	Current Use	NBHS Categories of Special Interest	NBHS Rating	NBHS Description (where applicable)
									landscaped grounds with rendered panelled piers to perimeter supporting beaded cornice on blind frieze below blocking course.
1882	Graigueconna	Old Connaught Avenue, Bray, Co. Dublin.	House	60260079	House	House	Architectural, Artistic, Historical, Social	Regional	Detached five-bay two-storey house, built 1790, on a T-shaped plan centred on three-bay two-storey "bas-relief" breakfront; single-bay (single- or two-bay deep) full-height central return (south). Occupied, 1911. Sold, 2012. Undergoing restoration, 2012. Hipped slate roof on a T-shaped plan behind parapet centred on hipped slate roof (south), terracotta ridge tiles, red brick Running bond (east) or rendered (west) chimney stacks having cut-granite capping supporting yellow terracotta pots, and concealed rainwater goods retaining cast-iron octagonal or ogee hoppers and downpipes. Rendered, ruled and lined walls to front (north) elevation on rendered chamfered plinth with rendered cornice on blind frieze below parapet having rendered coping; roughcast surface finish (remainder). Segmental-headed central door opening with cut-granite threshold, timber doorcase with fluted pilasters supporting rosette-detailed archivolt framing timber panelled door having sidelights below fanlight. Square-headed flanking window openings with concealed dressings framing six-over-six timber sash windows having margins with two-over-two sidelights having margins. Square-headed window openings (first floor) with cut-granite sills, and concealed dressings framing three-over-six timber sash windows. Square-headed window openings (south) with cut-granite sills, and concealed dressings framing six-over-six timber sash windows. Interior including (ground floor): central hall retaining carved timber surrounds to door openings framing timber panelled doors, and moulded plasterwork cornice to ceiling centred on "Acanthus"-detailed ceiling rose; square-headed door opening into inner hall with timber panelled double doors having overpanel; drawing room (east) retaining carved timber surround to door opening framing timber panelled door with carved timber surround to window opening framing timber panelled shutters, and decorative plasterwork cornice to ceiling; dining room (west) retaining carved timber surround to door opening framing timber panelled door with carved timber surround to window opening framing timber panelled shutters, and moulded plasterwork cornice to ceiling; and carved timber surrounds to door openings to remainder framing timber panelled doors with carved timber surrounds to window openings framing timber panelled shutters. Set in landscaped grounds with rendered panelled piers to perimeter supporting beaded cornice on blind frieze below blocking course.
1883	Knocklinn	Ballyman Road, Bray, Co. Dublin.	Country house	60260088	Country house		Architectural, Artistic, Historical, Social	Regional	Detached three-bay two-storey over raised basement country house, occupied 1887, on a T-shaped plan with two-bay single-storey double-pile flanking wings; two-bay (single-bay deep) two-storey lean-to central return (west). Occupied, 1911. For sale, 1934. Vacated, 1981. Now disused. Pitched slate roof on a T-shaped plan behind parapet extending into lean-to slate roof (west); hipped and pitched double-pile (M-profile) slate roofs behind parapets (wings), roll moulded clay ridge tiles, cut-granite chamfered coping to gables with rendered chimney stacks to apexes on rendered chamfered cushion courses on rendered bases having "Cyma Recta"- or "Cyma Reversa"-detailed cornices below capping supporting yellow terracotta pots, paired rendered "wallhead" chimney stacks (wings) having "Cyma Recta"- or "Cyma Reversa"-detailed cornices below capping, and concealed rainwater goods with cast-iron rainwater goods to rear (west) elevation on rendered red brick header bond eaves retaining cast-iron octagonal or ogee hoppers and downpipes. Part creeper- or ivy-

RPS No.	Structure Name	Location	Building Type	NBHS Reg. No.	Original Use	Current Use	NBHS Categories of Special Interest	NBHS Rating	NBHS Description (where applicable)
									covered rendered, ruled and lined walls on moulded cushion course on rendered, ruled and lined base with rusticated piers (ground floor) or rusticated quoins (first floor) to corners supporting rendered red brick header bond "Cyma Recta"- or "Cyma Reversa"-detailed cornice below parapet; part creeper- or ivy-covered rendered, ruled and lined surface finish to rear (west) elevation. Segmental-headed central door opening approached by flight of fourteen cut-granite steps, doorcase with engaged Composite columns on padstones supporting cornice on rosette-detailed fluted frieze, and moulded rendered surround with fittings now boarded up retaining fanlight. "Venetian Window" (first floor) with cut-granite sill on "Cavetto"-detailed consoles, and moulded rendered surround having bull nose-detailed reveals centred on panelled keystone framing two-over-two timber sash window having one-over-one sidelights. Square-headed window openings with cut-granite sills, and concealed dressings having bull nose-detailed reveals framing two-over-two timber sash windows having one-over-one sidelights. Square-headed window openings (wings) with cut-granite sills, and rendered surrounds having bull nose-detailed reveals supporting pediments on blind friezes framing two-over-two timber sash windows. Square-headed window openings in tripartite arrangement with cut-granite sills, timber mullions, and rendered surrounds having bull nose-detailed reveals supporting pediments on blind friezes framing two-over-two timber sash windows having one-over-one sidelights. Square-headed window openings to rear (west) elevation with cut-granite sills, and concealed dressings framing two-over-two timber sash windows. Interior including (ground floor): central hall retaining carved timber surrounds to door openings with fittings now missing, cantilevered staircase on a dog leg plan with balustrade now missing, carved timber surround to opening to half-landing with carved timber surrounds to door openings, carved timber surrounds to door openings to landing, and moulded plasterwork cornice to ceiling centred on "Acanthus"-detailed ceiling rose; reception room (south) retaining carved timber surround to door opening with carved timber surround to window opening framing timber panelled reveals or shutters, and decorative plasterwork cornice to ceiling centred on "Acanthus"-detailed ceiling rose; reception room (north) retaining carved timber surround to door opening with carved timber surround to window opening framing timber panelled reveals or shutters, and decorative plasterwork cornice to ceiling centred on "Acanthus"-detailed ceiling rose; and carved timber surrounds to door openings to remainder with carved timber surrounds to window openings framing timber panelled shutters. Set in own grounds with granite ashlar piers to perimeter having cut-granite shallow pyramidal capping supporting quatrefoil-detailed looped wrought iron double gates.
1883	Knocklinn	Ballyman Road, Bray, Co. Dublin.	Entrance Walls	60260088	Entrance Walls	Entrance Walls	Architectural, Artistic, Historical, Social	Regional	See Above.

RPS No.	Structure Name	Location	Building Type	NBHS Reg. No.	Original Use	Current Use	NBHS Categories of Special Interest	NBHS Rating	NBHS Description (where applicable)
1885	Thornhill (Saint Gerard's School)	Old Conna, Bray, Co. Dublin.	Country house	60280001	Country house	School	Architectural, Artistic, Historical, Social	Regional	Detached seven-bay two-storey country house, built 1769; extant 1778, on an F-shaped plan with five-bay two-storey side (east) elevation. Sold, 1919, to accommodate alternative use. Burnt, 2005. Restored, 2008. Replacement hipped slate roof on an F-shaped plan behind parapet with clay ridge tiles, rendered chimney stacks having capping supporting terracotta or yellow terracotta pots, and concealed rainwater goods retaining cast-iron hoppers and downpipes. Rendered, ruled and lined walls on cut-granite chamfered cushion course on rendered plinth with iron-covered "Cyma Recta"- or "Cyma Reversa"-detailed cornice supporting iron-covered blocking course to parapet. Square-headed central door opening approached by two cut-granite steps, doorcase with engaged Doric columns on plinths supporting modillioned pediment on "triglyph"-detailed frieze on entablature, and concealed dressings framing glazed timber panelled door. Square-headed window openings with cut-granite sills, and concealed dressings framing replacement two-over-one (ground floor) or two-over-two (first floor) timber sash windows. Interior including (ground floor): central entrance hall retaining carved timber surrounds to door openings framing timber panelled doors, and plasterwork cornice to ceiling; staircase hall (south) retaining carved timber surrounds to door openings framing timber panelled doors, cantilevered staircase on a dog leg plan with turned timber balusters supporting carved timber banister terminating in volute, carved timber surround to window opening to half-landing, carved timber surrounds to door openings to landing framing timber panelled doors, and plasterwork cornice to ceiling centred on plasterwork ceiling roses; dining room (north-east) retaining carved timber surround to door opening framing timber panelled door with carved timber surrounds to window openings framing timber panelled shutters on panelled risers, Classical-style chimneypiece, and picture railing below plasterwork cornice to ceiling on "bas-relief" frieze centred on decorative plasterwork ceiling rose; drawing room (north-west) retaining carved timber surround to door opening framing timber panelled door with carved timber surrounds to window openings framing timber panelled shutters on panelled risers, Classical-style chimneypiece, and picture railing below plasterwork cornice to ceiling on "bas-relief" frieze centred on decorative plasterwork ceiling rose; and carved timber surrounds to door openings to remainder framing timber panelled doors with carved timber surrounds to window openings framing timber panelled shutters. Set in relandscaped grounds.
1885	Thornhill	Old Conna, Bray, Co. Dublin.	Gateway	60260085	Gateway	Gateway	Architectural, Artistic	Regional	Gateway, extant 1909, on a symmetrical plan comprising pair of cut-granite panelled piers on cut-granite plinths having cornices below fluted domed capping supporting spear head-detailed cast-iron double gates with cut-granite panelled outer piers on cut-granite plinths having cornices below fluted domed capping supporting spear head-detailed cast-iron serpentine railings. Now disused. Road fronted at entrance to grounds of Thornhill.
1886	Vallambrosa	Thornhill Road, Old Conna, Bray, Co. Dublin.	House	60280004	House	House	Architectural, Artistic, Historical, Social	Regional	Detached four-bay two-storey over basement house, extant 1881, on a T-shaped plan centred on two-bay two-storey double gable-fronted split-level breakfront. Set in landscaped grounds with rendered piers to perimeter having cut-granite capping supporting wrought iron double gates.

RPS No.	Structure Name	Location	Building Type	NBHS Reg. No.	Original Use	Current Use	NBHS Categories of Special Interest	NBHS Rating	NBHS Description (where applicable)
1964	Glenfield	Thornhill Road, Old Conna, Bray, Co. Dublin.	House	60280003	House	House	Architectural, Artistic, Historical, Social	Regional	Detached three-bay two-storey house, built 1840, on a cruciform plan originally three-bay two-storey on a T-shaped plan centred on single-bay single-storey projecting porch to ground floor on an engaged half-octagonal plan; single-bay (single-bay deep) full-height central return (north). Leased, 1901. "Improved", 1911, producing present composition. Pitched slate roof on a T-shaped plan centred on pitched slate roof (north) with clay ridge tiles, concrete or rendered coping to gables with rendered chimney stacks to apexes having stepped capping supporting terracotta pots, and cast-iron rainwater goods on timber box eaves retaining cast-iron octagonal or ogee hoppers and downpipes. Creeper- or ivy-covered slate hung walls to front (south) elevation; roughcast surface finish (remainder). Paired square-headed window openings (ground floor) with cut-granite flush sills, and concealed dressings framing twelve-over-one timber sash windows. Square-headed window openings (first floor) with cut-granite sills, and concealed dressings framing one-over-one timber sash windows. Square-headed window openings (remainder) with cut-granite sills, and concealed dressings framing six-over-six timber sash windows. Interior including (ground floor): central vestibule on a half-octagonal plan with moulded plasterwork cornice to ceiling; elliptical-headed opening into hall; hall retaining carved timber surrounds to door openings framing timber panelled doors, staircase on a dog leg plan with turned timber balusters supporting carved timber banister, and carved timber surrounds to door openings to landing framing timber panelled doors; and carved timber surrounds to door openings to remainder framing timber panelled doors with timber panelled shutters to window openings. Set in landscaped grounds with piers to perimeter having cut-granite shallow pyramidal capping supporting wrought iron double gates.
1976	Thornhill	Thornhill Road, Old Conna, Bray, Co. Dublin	Church / chapel	60280002	Church / chapel	Church / chapel	Architectural, Artistic, Historical, Social, Technical	Regional	Detached four-bay double-height Catholic chapel, built 1928; consecrated 1928, on a T-shaped plan comprising three-bay double-height nave opening into single-bay (single-bay deep) double-height transepts centred on chancel to crossing (west) with single-bay single-storey gabled projecting porch to entrance (east) front. "Restored", 2008, producing present composition. Replacement pitched and hipped slate roof on a T-shaped plan with clay or terracotta ridge tiles, coping to gable to entrance (east) front, and uPVC rainwater goods on timber eaves boards on roughcast eaves. Roughcast walls. Round-headed window openings with concrete sills, and concealed dressings framing fixed-pane fittings having stained glass margins. Round-headed window opening to crossing (west) with concrete sill, and concealed dressings framing storm glazing over fixed-pane fitting having leaded stained glass margins centred on leaded stained glass panel. Interior including vestibule (east); round-headed door opening into nave below cut-limestone wall monument (1954) with concealed dressings framing replacement glazed diagonal timber boarded or tongue-and-groove timber panelled double doors; full-height interior open into roof with herring bone-pattern timber parquet central aisle between cruciform-detailed timber pews, timber stations between stained glass windows, round-headed arcades to transepts supporting timber galleries, carpeted stepped dais to sanctuary to crossing (west) with timber panelled altar below stained glass "West Window" (1928), and exposed collared timber roof construction with timber boarded ceiling. Set in relandscaped grounds shared with Thornhill.

RPS No.	Structure Name	Location	Building Type	NBHS Reg. No.	Original Use	Current Use	NBHS Categories of Special Interest	NBHS Rating	NBHS Description (where applicable)
1977	The Ochra	Thornhill Road, Old Conna, Bray, Co. Dublin.	Gate lodge	60280007	Gate lodge	Gate lodge	Architectural	Regional	Detached three-bay single-storey gate lodge, built 1905; occupied 1911, on a T-shaped plan centred on single-bay single-storey gabled breakfront. Pitched slate roof on a T-shaped plan centred on pitched (gabled) slate roof (breakfront) with terracotta ridge tiles, paired red brick English Garden Wall bond central chimney stacks having corbelled stepped capping supporting terracotta pots, timber bargeboards to gables on timber purlins with timber finials to apexes, and remains of cast-iron rainwater goods on timber eaves boards on exposed timber rafters retaining cast-iron downpipes. Roughcast walls with "timber frame" surface finish to gables. Square-headed central door opening with concrete step threshold, and concealed dressings framing glazed timber panelled door. Square-headed window openings with cut-granite sills, and concealed dressings framing eight-over-two timber sash windows. Set perpendicular to road opposite entrance to grounds of The Ochra.
1982	The Ochra	Thornhill Road, Old Conna, Bray, Co. Dublin.	House	60280006	House	House	Architectural, Artistic, Historical, Social	Regional	Detached four- or five-bay (three-bay deep) single-storey house with half-dormer attic, built 1905; occupied 1911, on a U-shaped plan with single-bay full-height gabled (west) or single-bay full-height (east) advanced end bays centred on single-bay single-storey gabled projecting porch to ground floor. Pitched terracotta tiled roof on a U-shaped plan centred on paired gablets to window openings to half-dormer attic, crested terracotta ridge tiles, red brick Flemish bond chimney stacks having thumbnail beaded stringcourses below capping supporting terracotta or yellow terracotta tapered pots, timber bargeboards to gables on timber purlins with terracotta finials to apexes, and cast-iron rainwater goods on exposed timber rafters retaining cast-iron downpipes. Part creeper- or ivy-covered red brick Flemish bond walls (ground floor) on red brick header bond chamfered cushion course on red brick Flemish bond plinth; roughcast surface finish (half-dormer attic) with "timber frame" surface finish to gables. Square-headed central window opening (ground floor) with moulded rendered sill course, and "timber frame" surround framing timber casement window having leaded stained glass panels. Square-headed opposing door openings ("cheeks") with cut-granite thresholds, and red brick voussoirs framing glazed timber panelled doors having overlights. Paired camber-headed window openings (ground floor) with cut-granite sills, and red brick voussoirs framing timber casement windows having overlights. Paired square-headed window openings (half-dormer attic) with cut-granite sills, and concealed dressings framing timber casement windows. Set in landscaped grounds with wrought iron-detailed "bird cage" piers to perimeter having wrought iron finial-topped capping supporting wrought iron double gates.
1985	Knocklinn	Ballyman Road, Bray, Co. Dublin.	Gate lodge	60260089	Gate Lodge	Gate lodge	Architectural	Regional	Detached three-bay single-storey gate lodge, occupied 1901, on a T-shaped plan centred on single-bay single-storey gabled projecting open porch. Renovated. Hipped slate roof on a T-shaped plan centred on pitched (gabled) slate roof on chamfered timber posts, perforated crested terracotta ridge tiles centred on rendered chimney stack having rounded capping supporting terracotta tapered pots, chevron- or saw tooth-detailed timber bargeboards to gable, and replacement plastic rainwater goods on decorative timber eaves boards on exposed timber rafters retaining cast-iron downpipes. Rendered walls bellcast over rendered plinth. Square-headed central door opening with tessellated terracotta tiled threshold, and concealed dressings framing timber boarded or tongue-and-groove timber panelled door. Square-headed flanking window openings in camber-headed recesses with cut-granite sills, and concealed

RPS No.	Structure Name	Location	Building Type	NBHS Reg. No.	Original Use	Current Use	NBHS Categories of Special Interest	NBHS Rating	NBHS Description (where applicable)
									dressings framing replacement uPVC casement windows. Set back from line of road at entrance to grounds of Knocklinn.
2075	Cuilin	Allies River Road, Bray, Co. Dublin.		60260084	Gates / railings / walls	Gates / railings / walls	Architectural, Artistic	Regional	Gateway, extant 1909, on a symmetrical plan comprising pair of rendered panelled tapered piers on moulded cushion courses on plinths having cornices below shallow pyramidal capping supporting crocketed cast-iron double gates with rendered panelled tapered outer piers on moulded cushion courses on plinths having cornices below shallow pyramidal capping supporting crocketed cast-iron serpentine railings. Road fronted at entrance to grounds of Cuilin.

Old Connaught
Local Area Plan - Draft

Draft LAP Boundary

dlr County Boundary

Protected Structures

*Refer to Table 5.1 for details of labels shown on map for each protected structure

Record of Monuments and Places
(For Areas of Archaeological Potential)

RMP No.	Location	Classification
026-064	Ballyman	Enclosure
026-065	Ballyman Road	Ring Ditch
026-066	Old Connaught Avenue	Church (026-066001), Graveyard (026-066002)

Record of Industrial Heritage

Site ID	Location	Classification
855	At western end of Old Connaught Avenue	Letter Box

0 50 100 200 300 400 500 Meters

Planning and Economic Development

A Blighe
Director of Services

dlr Comhairle Contae County Council

Built Heritage

Senior Planner: L. Walsh	**Chief Technician :** M. Hennessy
Prepared By: B. Wynne	**Drawn By:** O. Feighery

Date:	Scale:	Drawing No:
March 2025	1:11,000	PL - 25 - 021

dlr
Comhairle Contae County Council